

SI-MNH-955a
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 17 May 64 Total Minutes: 657 Total Miles 105

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>105</u>	<u>619</u>	<u>5.8</u>	<u>5.8</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>81</u>	<u>38</u>	<u>1</u>	<u>40</u>	<u>330</u>	<u>229</u>	<u>1</u>	<u>81</u>	<u>4.07</u>	<u>6.03</u>	<u>1</u>	<u>2.03</u>	<u>3.14</u>	<u>2.18</u>	<u>.01</u>	<u>.77</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>6</u>		<u>6</u>	<u>12</u>		<u>12</u>	<u>2</u>		<u>2</u>	<u>.11</u>		<u>.11</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>23</u>	<u>271</u>	<u>11.78</u>	<u>2.58</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>3</u>		<u>3</u>		<u>5</u>		<u>5</u>		<u>1.67</u>		<u>1.67</u>		<u>.05</u>		<u>.05</u>	

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>8</u>	472 <u>473</u>	<u>.08</u>	<u>8</u>	472 <u>473</u>	<u>.08</u>

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 18 May 64 Total Minutes: 775 Total Miles 131

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>41</u>	<u>320</u>	<u>7.80</u>	<u>2.44</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>33</u>	<u>14</u>	<u>1</u>	<u>2</u>	<u>160</u>	<u>123</u>	<u>1</u>	<u>2</u>	<u>4.85</u>	<u>8.79</u>	<u>1</u>	<u>1</u>	<u>1.22</u>	<u>.94</u>	<u>.01</u>	<u>.02</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>-</u>	<u>1</u>	<u>2</u>	<u>-</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>.02</u>	<u>-</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>12</u>	<u>158</u>	<u>13.17</u>	<u>1.21</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>6</u>	<u>269</u>	<u>.05</u>	<u>2</u>	<u>216</u>	<u>.02</u>

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 19 May 64 Total Minutes: 767 Total Miles 135

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>78</u>	<u>410</u>	<u>5.13</u>	<u>3.04</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>71</u>	<u>12</u>	<u>15</u>	<u>8</u>	<u>182</u>	<u>58</u>	<u>18</u>	<u>8</u>	<u>2.56</u>	<u>3.05</u>	<u>1.20</u>	<u>1</u>	<u>1.35</u>	<u>.43</u>	<u>.13</u>	<u>.06</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>				

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>8</u>	<u>217</u>	<u>36.17</u>	<u>1.61</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>6</u>	<u>5</u>			<u>9</u>	<u>6</u>			<u>1.5</u>	<u>1.2</u>			<u>1.07</u>	<u>1.04</u>		

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>9</u>	<u>315</u>	<u>.07</u>	<u>4</u>	<u>279</u>	<u>.03</u>

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 20 May 64 Total Minutes: 752 Total Miles 124

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
78	583	7.47	4.70

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
73	29	20	8	291	235	22	8	3.99	8.1	1.1	1	2.35	1.90	.18	.06

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
3			3			1			.02		

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
6	280	46.67	2.26

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
3	3			3	3			1	1			.02	.02		

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
2	2	1	.02

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
7	489	.06	6	484	.05

$$\begin{array}{r} 29 \overline{) 811.00} \\ \underline{58} \\ 231 \\ \underline{203} \\ 280 \\ \underline{272} \\ 80 \\ \underline{76} \\ 40 \\ \underline{36} \\ 40 \\ \underline{36} \\ 40 \\ \underline{36} \\ 40 \end{array}$$

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 21 May 64 Total Minutes: 768 Total Miles 131

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>25</u>	<u>29</u>	<u>1.16</u>	<u>.22</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>22</u>	<u>2</u>	<u>13</u>	<u>0</u>	<u>26</u>	<u>2</u>	<u>15</u>	<u>0</u>	<u>1.18</u>	<u>1</u>	<u>1.15</u>	<u>0</u>	<u>.20</u>	<u>.02</u>	<u>.11</u>	<u>0</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>.01</u>	<u>.01</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>2</u>	<u>2</u>	<u>1</u>	<u>.02</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 22 May 64 Total Minutes: 779 Total Miles 123

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
18	36	2	.29

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
15	6	0	5	22	10	0	6	1.47	1.67	0	1.20	.18	.08	0	.05

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
2	1	1	2	1	1	1	1	1	.02	.01	.01

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
2	12	6	.10

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
3	20	.02	1	7	.01

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 23 May 64 Total Minutes: 793 Total Miles 136

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>31</u>	<u>93</u>	<u>3.00</u>	<u>.68</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>23</u>	<u>13</u>	<u>-</u>	<u>2</u>	<u>73</u>	<u>61</u>	<u>-</u>	<u>2</u>	<u>3.17</u>	<u>4.69</u>	<u>-</u>	<u>1</u>	<u>.54</u>	<u>.45</u>	<u>-</u>	<u>.01</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>.01</u>	<u>-</u>	<u>-</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>8</u>	<u>18</u>	<u>2.25</u>	<u>.13</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>2</u>	<u>47</u>	<u>.01</u>	<u>0</u>	<u>0</u>	<u>0</u>

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 24 May 64 Total Minutes: 798 Total Miles 124

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>13</u>	<u>15</u>	<u>1.15</u>	<u>.12</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>12</u>	<u>3</u>	<u>1</u>	<u>-</u>	<u>14</u>	<u>3</u>	<u>1</u>	<u>-</u>	<u>1.17</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>.11</u>	<u>.02</u>	<u>.01</u>	<u>-</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 25 May 64 Total Minutes: 795 Total Miles 138

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>7</u>	<u>7</u>	<u>1</u>	<u>.05</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>5</u>				<u>5</u>				<u>1</u>							

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>.01</u>		<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 26 May 64 Total Minutes: 785 Total Miles 133

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>16</u>	<u>19</u>	<u>1.19</u>	<u>.14</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>16</u>	<u>5</u>	<u>1</u>	<u>6</u>	<u>19</u>	<u>6</u>	<u>1</u>	<u>7</u>	<u>1.19</u>	<u>1.20</u>	<u>1</u>	<u>1.17</u>	<u>.14</u>	<u>.05</u>	<u>.01</u>	<u>.05</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 27 May 64 Total Minutes: 772 Total Miles 129

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>80</u>	<u>1192</u>	<u>14.9</u>	<u>9.24</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>76</u>	<u>26</u>	<u>31</u>	<u>11</u>	<u>483</u>	<u>414</u>	<u>43</u>	<u>11</u>	<u>6.36</u>	<u>15.54</u>	<u>1.39</u>	<u>1</u>	<u>3.75</u>	<u>3.21</u>	<u>3.33</u>	<u>.09</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>			<u>2</u>			<u>1</u>			<u>.02</u>		

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>12</u>	<u>707</u>	<u>58.92</u>	<u>5.48</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>11</u>	<u>1093</u>	<u>.09</u>	<u>9</u>	<u>1083</u>	<u>.07</u>

SI-MNH-955a
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 28 May 64 Total Minutes: 752 Total Miles 133

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>65</u>	<u>300</u>	<u>4.62</u>	<u>2.26</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>62</u>	<u>16</u>	<u>35</u>	<u>2</u>	<u>182</u>	<u>97</u>	<u>52</u>	<u>2</u>	<u>2.94</u>	<u>6.06</u>	<u>1.49</u>	<u>1</u>	<u>1.37</u>	<u>.73</u>	<u>.39</u>	<u>.02</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>2</u>	<u>-</u>	<u>2</u>	<u>2</u>	<u>-</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>.02</u>	<u>.02</u>	<u>-</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>4</u>	<u>116</u>	<u>29</u>	<u>.87</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>5</u>	<u>223</u>	<u>.04</u>	<u>1</u>	<u>100</u>	<u>.01</u>

SI-MNH-955a
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 29 May 64 Total Minutes: 766 Total Miles 115

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>72</u>	<u>643</u>	<u>8.93</u>	<u>5.51</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>66</u>	<u>25</u>	<u>38</u>	<u>7</u>	<u>327</u>	<u>126</u>	<u>83</u>	<u>7</u>	<u>4.85</u>	<u>5.04</u>	<u>2.18</u>	<u>1</u>	<u>2.78</u>	<u>1.10</u>	<u>.71</u>	<u>.06</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>.02</u>	<u>.01</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>9</u>	<u>321</u>	<u>35.67</u>	<u>2.79</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>12</u>	<u>560</u>	<u>.10</u>	<u>34</u>	<u>417</u>	<u>.03</u>

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 30 May 64 Total Minutes: 781 Total Miles 139

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>23</u>	<u>31</u>	<u>1.35</u>	<u>.22</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>22</u>	<u>3</u>	<u>9</u>	<u>1</u>	<u>30</u>	<u>6</u>	<u>12</u>	<u>1</u>	<u>1.36</u>	<u>2</u>	<u>1.33</u>	<u>1</u>	<u>.23</u>	<u>.04</u>	<u>.09</u>	<u>.01</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 31 May 64 Total Minutes: 794 Total Miles 80

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>17</u>	<u>22</u>	<u>1.29</u>	<u>.28</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>14</u>	<u>8</u>	<u>2</u>	<u>1</u>	<u>19</u>	<u>9</u>	<u>2</u>	<u>1</u>	<u>1.36</u>	<u>1.13</u>	<u>1</u>	<u>1</u>	<u>.24</u>	<u>.11</u>	<u>.03</u>	<u>.01</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>.03</u>	<u>.01</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>1</u>	<u>5</u>	<u>.01</u>			

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 1 June 64 Total Minutes: 808 Total Miles 150

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>9</u>	<u>9</u>	<u>1</u>	<u>.06</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>5</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>5</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>.03</u>	<u>.01</u>	<u>.01</u>	<u>0</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>3</u>	<u>2</u>		<u>3</u>	<u>2</u>		<u>1</u>	<u>1</u>		<u>.02</u>	<u>.01</u>	

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 2 June 64 Total Minutes: 828 Total Miles 150

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>18</u>	<u>25</u>	<u>1.39</u>	<u>.17</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>15</u>	<u>2</u>	<u>1</u>	<u>7</u>	<u>22</u>	<u>6</u>	<u>1</u>	<u>7</u>	<u>1.47</u>	<u>3</u>	<u>1</u>	<u>1</u>	<u>.15</u>	<u>.04</u>	<u>.01</u>	<u>.05</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>3</u>	<u>2</u>		<u>3</u>	<u>2</u>		<u>1</u>	<u>1</u>		<u>.04</u>	<u>.01</u>	

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 3 June 64 Total Minutes: 826 Total Miles 130

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
65	352	5.42	2.71

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
38	12	2	6	154	82	2	6	4.05	6.83	1	1	1.18	.63	.07	.05

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
8	1	4	8	1	4	1	1	1	.06	.01	.03

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
26	187	7.19	1.44

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
3	3	1	.02

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
9	272	.07	54	247 239	.07 .03

SI-MNH-955a
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 4 June 64 Total Minutes: 816 Total Miles 128

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>78</u>	<u>136</u>	<u>1.74</u>	<u>1.06</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
47	12	2	15	63	18	2	18	1.34	1.50	1	1.20	.49	.14	.02	.14

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
10	7	2	16	13	2	1.60	1.86	1	.13	.10	.02

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>23</u>	<u>55</u>	<u>2.39</u>	<u>.43</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
1		1		1		1		1		1		.01		.01	

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>1</u>	<u>15</u>	<u>.01</u>	<u>1</u>	<u>15</u>	<u>.01</u>

1. 72 · 1377

2. 30-23-2-9, 136-151-2-11

3. 1-0-0, 1-0-0 1-0-0

4. 52-1090

5. 25-0-23-2, 104-0-102-2

7. 4-6

8.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART A

DATE: 5 June 64 Total Minutes: 376 Total Miles 73

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>72</u>	<u>1377</u>	<u>19.13</u>	<u>18.88</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>30</u>	<u>23</u>	<u>2</u>	<u>9</u>	<u>176</u>	<u>151</u>	<u>2</u>	<u>11</u>	<u>5.87</u>	<u>6.57</u>	<u>1</u>	<u>1.22</u>	<u>2.11</u>	<u>1.67</u>	<u>.09</u>	<u>.15</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>.01</u>	<u>-</u>	<u>-</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>52</u>	<u>1090</u>	<u>20.96</u>	<u>14.83</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>25</u>	<u>0</u>	<u>23</u>	<u>2</u>	<u>104</u>	<u>0</u>	<u>102</u>	<u>2</u>	<u>4.16</u>	<u>0</u>	<u>4.43</u>	<u>1</u>	<u>1.42</u>	<u>-</u>	<u>1.40</u>	<u>.07</u>

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>4</u>	<u>6</u>	<u>1.5</u>	<u>.07</u>

VIII. Abundance of Flocks:

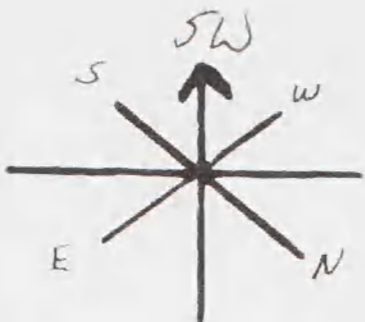
Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>13</u>	<u>1136</u>	<u>.18</u>	<u>12</u>	<u>1107</u>	<u>.16</u>



DATE 17 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0830	begin observations					
0900	Haw. Noddy	1				
0905	" "	1				
0906	W.T. Tropicbird	1				
0907	W.T. Tropicb.	1			over land	
0907	Sooty Tern	1				
0911	Haw. Noddy	1			headed directly for cliffs	
0912	W.T. Tropicb.	1			flushed from water by approaching ship	
0915	Hawaiian Noddy	2				
0921	Wedgetail	3				
0932	White-t. Tropicb.	7				
0937	wedgetail	1			around on cliff face	
0938	"	"				
0942	W.T. Tropicbird	1				
1036	Wedgetail	1				
1041	Sooty Tern	1				
1043	Wedgetail	2				
1127	Wedgetail	1				
1136	Wedgetail	3	SE			
1137	Sooty Shear	1	SE		✓	
1138	Wedgetail	3	SE			
1150	Wedgetail	1	SE			
1152	Wedgetail	3	E			
1154	Bulwers P.	2	E			
1204	Wedgetail	1	W			
1213	Bulwers P.	1	NE			
1216	Bulwers P.	1	SE			
1219	Wedgetail	1				
1220	Shearwater/petrel	1			seen by watch	
1221	Bulwers Petrel	3				
1225	Bulwers P.	9			moving flock - tight packed feeding?	
1227	Wedgetail	1				
1228	Newell's Shear	2				

28 20
14 22
25 17
10.5 2



DATE 17 May 64
Pg. # 2 ✓

time species # dir. hgt. remarks loc.

1230	Wedgetail	1				
1229	WT Tropicbird	1				
1236	Bulwers P.	9			feeding flock	
	Wedgetails	1				
1243	Bulwer's P	1	N			
1248	Bulwer's P	1	S			
1249	" "	8			feeding flock	
1255	" "	1	NW			
1259	Sooty Tern	1	NW			
1302	Bulwer's P	1	N			
1305	" "	1	SE			
	wedgetail	1	NW			
1307	Bulwer's P	1	S			
1309	" "	5				
1317	Common Noddy	1	S		(4 sitting in group)	
1323	Sooty Shear	1	NW		✓	
1325	Wedgetail	2	S		} feeding flock - one dark phase wedgetail	
	Com. Noddy	2				
	Sooty Tern	80-100				
	Wedgetail	50-60				
1326	R-F. Booby	1	imm			
	Bulwer's P.	2	NW			
1330	Newell's Shear.	1	SE			
1342	Bulwer's P	1	E			
	Com. Noddy	1	E			
1414	R-F. Booby	1	adult			
1419	Bulwer's P	2	NE		leading NE into flock	
1424	" "	1	N			
1430	flock to	5	SE	at 1 mile		
1445	flock to	5		at 1/2 mile+		
1448	Red-footed B.	3			- now 5 Boobies in flock	
1449	Bulwer's Petrel	2				
1456	Wedgetail	2				
	Bulwers P	1			flying to join flock	
1500	flock swinging to		NE			
1515	Sooty Tern	50			} same flock as above	
	Wedgetail	50				
	Red-footed B	2				
	Bulwers	4				
	Newell's S. Noddy Tern	3				



DATE 17 May 64
Pg. # 3

time species # dir. hgt. remarks loc.

1524	Wedgetails Bulwers P	1	NE		headed toward rock	
1526	Bulwers P	1	NE			
1530	Bulwers P	2	S			
1535	Bulwers P	1	S			
1547	Bulwers P	1	S			
1548	Sooty Tern	2	N			
1551	Sooty Shear	1	N	✓	came within 100yds - underwings only slightly lighter	
1553	Sooty Tern	1	NE			
1554	Bulwers P	1	S			
1558	Sooty Shear Bulwers P.	1	NE	✓		
1600	Shearwater/ Petrel	1				
1601	Wedgetail	1				
1607	Wedgetail	1	W			
1614	Wedgetail (Sooty Tern)	40-50 80-100			} feeding flock	
1616	Wedgetail	1	W			
1631	"	1	W			
1638	Wedgetail Sooty tern	15-20 30-40			} feeding flock	
1649	Bulwers P	1	SE			
1652	Pet/Shear	2	NE			
1653	Wedgetail	1	S			
1657	"	1	SE			
1704	Newell's S. Bulwers P	1	NE			
1705	Wedgetail	1	NE			
1711	Sooty Tern	1	NE			



DATE 17 May 64
Pg. # 4

time	species	#	dir.	hgt.	remarks	loc.
1717	Bulwer's P	1				
1722	com. Noddy	1				
1724	Bulwer's P	1	SE			
1726	Bulwer's P	1	NE			
1727	Wedgetail	1	NE			
1732	Bulwer's P	1	SE			
1740	Bulwer's P	1	SE			
1745	Sooty Shear	1	NW		✓	
1749	Bulwer's P	1	E			
1754	Dark-rump P.	1	NW			
1757	Sooty Tern	1				
1758	Bulwer's P	1	NE			
1800	Newell's S	1	N			
1802	Shear ?	1	N		large all dark - constant rowing wingbeats pointed wings	
1803	Wedgetail	1	N			
1807	Sooty Tern	3	NE			
1815	Newell's S.	1				
	Wedgetail	1				
1820	Bulwer's P	4				
	Wedgetail	30			feeding flock	
	Sooty Tern	25				
1825	Sooty Tern	20				
	Wedgetail	50			feeding flock	
1828	Bulwer's P.	1				
	Sooty Tern	1				
1835	Sooty Tern	3				
1842	Wedgetail	1	N			
1848	Bulwer's P	2	N			
	wedgetail	1	N			
	sooty shear	1	N			
25 1855	Wedgetails	2	N		✓	



DATE 17 May 64
Pg. # 5

time species # dir. hgt. remarks loc.

1857 Sooty Tern 3 N

1902 end observations

136
229
253
618

164
60
202
293
619



DATE 18 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0555	Sooty Tern	1			begin observation	
	Wedgetail	1				
0615	Shearwater/ petrel	1			seen by watch	
0655	Petrel SP	1	SE		probably White-necked or Dark-rumped Petrel	
0706	Sooty Shear	1	NW		✓	
	Shearwater/ Petrel	2	E			
0720	Shearwater/ petrel	1				
	Flock					
	Sooty Tern	75 ± 25			feeding	
	Wedgetail	50 ± 10				
0745	Flock					
	Sooty Tern	40 ± 10			feeding	
	Wedgetail S.	50 ± 10				
	Tropicbird sp	1				
0805	Wedgetail	2	E			
0827	W-T. Tropicbird	1			tail is short, but in adult plumage otherwise (retrices about half length normal length)	
0835	Sooty tern	3				
0835	Sooty tern	3	N			
0858	Wedgetail	5	S		scattered	
0904	Wedgetail	1	S		dark phase	
0907	Sooty Tern	2	SE			
0928	Wedgetail	1	NW			
0932	Sooty Tern	3	S			
0943	Wedgetail	3	S			
0950	Newell's S.	1	S			
0955	Shearwater	1	S			
1057	shearwater/ petrel	1	NW			
1126	Sooty Tern	15				
1130	Wedgetail S	1				
1132	Sooty Shear	1	NW		✓	
1137	Sooty Tern	1				
1158	Sooty Tern	1	E			



DATE 18 May 64
Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1216	Newell's S.	1	NW			
1228	Lepidochloa Harcourt's S.P.	1	S			
1259	Sooty Shear	1	NW		✓	
1350	Shearwater	15			seen by watch in scattered flock; all flying close to water	
1357	Shear/Pet	1	S			
1402	Bulwer's P	1	NW			
1405	Sooty Tern	1	NW			
1424	Sooty Shear	3	NW		✓	
1550	Sooty Tern	15 15			at least 1 immature	
	Wedgetail S	3		25-100ft	scattered flock	
1606	Shearwater/ petrel	1	S			
1610	Wedgetail	2	SW			
1627	Sooty Shear	1	NW		✓	
1645	Sooty Shear	1	NW		✓	
1652	Sooty Shear	1	NW		✓	
1731	Wedgetail	2	E			
1753	Bulwer's P	1	N			
1843	Wedgetail	1	N			
1850	Wedgetail	1	NW			
	Sooty tern	1	NW			
1905					end observation	

39
123
158
320



DATE 19 May 64

Pg. # 1

time species # dir. hgt. remarks loc.

0610 begin observations

0611 Sooty Shear 1 NW ✓

0620 Sooty Tern 1 } in small flock

Wedgetail 4 }

~~Bonin Petrel~~ 1 }

0623 ~~Harcourt's SP~~ 1 S

0700 ~~Harcourt's SP~~ 1 W

0730 Red-tailed Tropicbird 1 } found dead in good condition

0730 Shear/Pet 1 NW } adult

0748 Sooty tern 1 } flock at a very great distance

Shearwater 10 }

Boddy/Tropicbird 3 }

0750 Newell's S 2 S called Boddy sp.

0759 B-F. Booby 1 S imm

0810 Newell's S. 1 W

0817 Shearwater/Petrel 1 W

0829 Bulwer's P. 1 N small - Bonin Is P. size - very fast flying, scaled to 25ft + glided at near that height for several seconds - white underparts - light grey upperparts

0834 Petrel sp. 4 N small, Bonin-sized, way out

Wedgetails 1 } small flock

0842 Newell's S. 1 E

0850 Shearwater/Petrel 1 N

0855 ~~Harcourt's SP~~ 1 N

0905 Wedgetail 2 S

0906 Sooty shears 2 NW ✓

0937 Sooty Shear 1 N ✓ seen by watch

0943 Sooty Shear 1 NW ✓

0950 Bulwers P 1 N

0955 BF Booby 1 E sub adult

0959 Petrel sp 1 NW Brown upperparts - white head - mottled brown underwing with white splotches - white belly.

18
168
177
48
411



DATE 19 May 64
Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1045	B-F Booby	1			subadult (seen earlier)	
1056	B-F Booby Brown N. Petrel	1	W			
1107	Sooty Shear	1	NW	✓		
1123	Bulwer's P	1	N			
1153	Wedgetail	1	S			
1204	Wedgetail	4	E		scattered	
1220	Wedgetail	1	SE			
1245	Sooty Shear	1	NW	✓		
1250	Sooty Tern	1+				
	Shearwater	35			feeding	
	Petrel					
	Bulwer's P		1			
1253	Wedgetail	2	E		dark phase	
	Newell's S	1	E			
1302	B-F Booby	1	E		dark head-like first bird	
1310	Wedgetail	1			light - seen by watch	
1315	Wedgetail	1			dark	
1320	Wedgetail	1			dark sat on water	
1324	Wedgetail	1				
1328	Sooty Shear	2	NW	✓	light	
1342	Sooty Shear	2	NW	✓		
1345	Black-footed A	1	S	✓		
1355	Sooty Shear	1	NW	✓	seen by watch	
1426	Wedgetail	2	SE	✓		
1432	Sooty Shear	2		✓		
1440	Wedgetail	1	S			
1441	Newell's S.	2	SE			
1445	Sooty Shear	1		✓	by watch	
	Bulwer's P	1				
1450	Sooty Tern	5	SE		2 adults, 3 imm. travel	
1500	Sooty Tern	80-100 (ad + imm)			feed flock traveling SE	
	Wedgetail	15-20 (ad + imm)				
	Sooty Shear	4				
	Bulwer's P	1				
	B-F Booby	1	imm			



DATE 19 May 64
Pg. # 3

time species # dir. hgt. remarks loc.

1513	D-R Petrel Wedgetail	1 5	S S	}	sitting on water in group 2 dark + 3 light
1529	Sooty Shear	1	NW		
	BWP Bonn Is. Petrel	1	NW	✓	
1602	BWP Bonn Is. Petrel	1	W		
1603	Sooty Shear	1	NW	✓	
1608	Floor				
	Sooty Tern	100		}	light phase
	Wedgetail	2			
	Fairy Tern	1			
1612	Sooty Shear	1	NE	✓	dark phase
	Wedgetail	1	NE		
	Novell's S	2	NE		all headed after floor
	BWP Bonn Is P.	1	NE		
1621	Shearwater/ petrel	1	W		
1629	BWP Bonn Is P.	1	W		
1634	Shearwater/ petrel	1	SW		
1636	Novell's S.	1	SE		
1658	Bulwers P.	1	N		
1702	Shearwater/ petrel	1	W		seen by watch
1707	Sooty Shear	1	NW	✓	
1716	BWP Bonn Is P.	1	N		
1728	Pomarine Jaeger	1	N		
1730	shearwater/ petrel	1	W		
1756	B-F Booby	2	W		subadults
1800	Sooty Tern	25-30		}	flock feed
	Wedgetail	10-15			
	Petrel / F. tern	3			



DATE 19 May 64
Pg. # 4

time	species	#	dir.	hgt.	remarks	loc.
1807	Wedgetail	3	N			
1819	White-necked P	1	E			
1821	Newell's S.	2	S			
	BWP	1	S			
1832	Pet/Glean	3	SE			
1838	BWP					
	Bonin Is. P.	1	SW			
1842	Lobelia					
	Harcourt's sp	1				
1844	BWP					
	Bonin Is. P.	1	SW			
1845	Newell's S	1	SE			
1848	Bulwer's P	1	E			
1850	Harcourt's sp	1	S			
1853	Newell's S	1	SE			
1907	White-necked P	1	E			
1910	end observation					

37
67
68
24
213
409

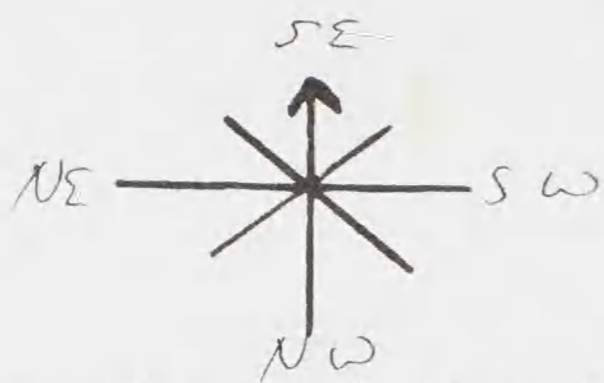


DATE 20 May 64
Pg. # 1

time species # dir. hgt. remarks loc.

0605	begin observations					
0610	Wedgetail	3	E		light	
0637	Shearwater / petrel	1	NE			
0652	Bulwers P.	1	ESE			
0700	Sooty Tern	50			60 dark 15 light immature feeding	
	Wedgetail	75				
	Dark-rumped P	1				
	B. F. Booby	1				
	Frigatebird	1				
0706	Wedgetails	1	S		dark	
0712	BWP Bonin Is. P.	2	N			
0719	B. F. Booby	1	SE		imm.	
0724	BWP Bonin Is. P.	1	NW			
0728	BWP Bonin Is. P.	1	SW			
0810	Wedgetail	1	S		dark phase	
0822	Wedgetail	5	NE		3 dark, 2 light	
0831	Wedgetail	2	S		dark	
0835	Newell's	1	S			
0845	"	1			followed ship for short time off stern	
0849	Shearwater	1				
0849	2nd sp	2	NW			
0852	Bulwers P.	1	NW			
0858	White-necked P	1	NW			
0900	Leach's Harcourt SP	1	NW			
0919	Wedgetail	1	S		dark	
0932	Shear/Pet	1	NW			
0937	Wedgetail	1	E		dark	
0942	Bulwers P	1	NW			
0946	Wedgetail	2	N		dark	
0947	Bulwers P	1	N			
1000	Sooty tern	75-100			} feed flock	
	Wedgetail	40-50				
	Tropicbird	1				
1005	BWP Bonin Is. P.	1				
1015	Petrel White-necked P.	1	NW			
1019	BWP Bonin Is. P.	1	SW			
1025	Shear/petrel	1	NW		seen by watch	

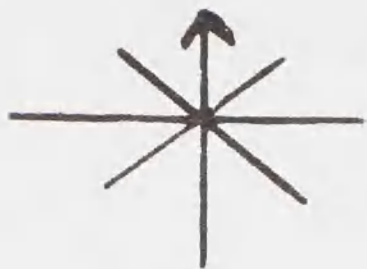
67
235
280
582



DATE 20 May 64

Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1030	Wedgetail	1	SW		dark phase	
1032	Bulwer's P	1	SW			
1034	Newell's S.	1	S			
1054	Bulwer's P	1				
	Shearwater petrel	2				
1058	Bonin Is P.	1				
1058	Sooty Tern	10			small feeding flock	
1105	Wedgetail	1	SW		dark	
1120	Shearwater petrel	1			seen by watch	
1121	Newell's S.	1	SW			
	Shearwater petrel	1	SW		seen by watch	
1148	Wedgetail	2	NW		dark	
1153	Bulwer's P.	1	SE		out on water	
1154	Wedgetail	1	SW		dark	
1205	Tropicbird sp	1		100ft		
1220	Wedgetail S	1	NE		dark	
1237	White-necked Petrel	1	S		molting	
1255	Sooty Tern	100-125			} flock feed	
	Wedgetail	30-60				
	Tropicbird	1				
1257	Newell's S.	1	SE			
1307	White-necked P.	2	SE			
1311	Wedgetail	1	SE		dark	
1313	Newell's S	1	SE			
1316	Wedgetail	3	SE		dark	
1346	White-necked P.	1	SW			
	Hancock's ST	1	SE			
1414	DR Petrel B-F. Booby	1	SE		adult subadult	
	Storm Petrel	2				
1415	Jarvis?	1				
1425	Bonin Is P	1				

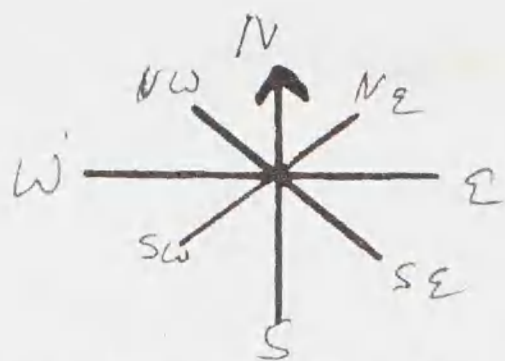


DATE 20 May 64
Pg. # 3

time	species	#	dir.	hgt.	remarks	loc.
1445	Wedgetail	1	SE		dark	
1447	White-necked P.	1	SE			
1456	Newell's S.	1	S			
1520	Wedgetail S	1	SE		dark	
1525	Sooty Tern	25				
1525	Wedgetail	25			all dark	
	Petrel sp.	1			dark - rumped or white necked P.	
	Frigate bird	1				
	Newell's S.	2				
1526	Harcourt's S.P.	1				
1528	White-necked P.	1	SE			
1530	Wedgetail	4	NW		dark - headed toward flock	
1531	Wedgetail	2	SE		dark	
1557	Harcourt's S.P.	1	SE			
1602	Blue-faced B.				same as before	
1617	Wedgetail S.	1	SE		dark	
1636	Sooty Tern	20			several immatures - turning toward adult plumage	
	Wedgetail	5			dark	
1656	Bulwer's P.	1				
1723	Shearwater	1	NW			
1730	Petrel sp.	1	N		brown upperparts - white underparts except dark underwings with white splotches in center - medium sized & fairly dark	
1732	Wedgetail	1	S		dark	
1734	Dark-rumped P.	1	N		probably <i>Arminjoniana</i>	
1735	B. Is. Petrel	1	S			
1750	Harcourt's S.P.	1	E			
1754	Wedgetail	1	N		dark	
1759	Wedgetail	2	N		dark	
1806	Wedgetail	1	NE		dark	
1807	Harcourt's S.P.	1	E			
1841	Harcourt's S.P.	1	E			
1855	end observation					

65
235
280
583

107
195
282
584



DATE 21 May 64
Pg. # 1

time species # dir. hgt. remarks loc.

0610 begin observations

0625 Shear/Pet 1 W

Petrel 1 W

0632 Newell's S 1 NE

Shearwater 1 E

0634 Wedgetail 1 E

0642 Storm Petrel 1

0651 ~~White-Ned P~~ 1 W

0713 ~~Bonin Is. P~~ 1 W

0723 ~~Bonin Is. P~~ 2 W

0803 ~~Bonin Is. P.~~ 1 W

0821 Sooty Tern 1 E

0825 ~~Bonin Is. P.~~ 1 W

0831 ~~Leach's~~ Harcourt's S.P. 1 W

0833 Sooty Shear. 1 NW

0859 Wedgetail 1 S

0912 White-t. Tropicb. 1 W

0918 ~~Bonin Is. Petrel~~ 1 W

0932 ~~Bonin Is. Petrel~~ 1 N

1029 ~~Bonin Is. Petrel~~ 1 W

1049 ~~Bonin Is. Petrel~~ 1 W

1338 Shearwater/

1358 ~~Petrel~~ 1 S

~~Bonin Is. P.~~ 1 W

1406 Tern sp 1 seen by watch

1412 one large turtle seen

1630 ~~Bonin Is. P~~ 2 W

1645 Shear/Pet 1 W

1810 ~~Dark-rumped P.~~ 1 E

1845 Christmas Is. S. 1 W

1910 end observations

dark upper breast, white underwing linings
bordered by narrow black ~~st~~ edgings, dark-rumped
size or slightly smaller.

flushed from water
light phase



DATE 22 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0545	begin observations					
0640	Wedgetail	1	Σ		light phase	
0815	R-T Tropicbird	1	N		adult, but lacked red retrices; some gray	
0835	Storm Petrel?	1	W		on lead + back — bill red	
1037	Wedgetail	5+	NW	}	scattered flock may have been same kind as seen last cruise but distance prevented better look. found	
	Pink footed ??	1				
1115	Sooty Tern	7			small flock, probably not feeding	
1127	Bulwer's P.	2	NW			
1131	Wedgetail	1			dark-bird landed on water	
1223	Newell's S	1	N			
1317	Bulwer's P	1	N			
1446	Sooty Tern	5	}	}	small feeding flock	
	Shearwater/ petrel	2				
1516	Bulwer's P	1	N			
1545	White-t. Tropicbird	1	N			
1637	Storm Petrel	1				
1652	Wedgetail	1	N		light	
1856	Wedgetail	1	Σ		light	
1840	Bulwer's P	1	NW			
1745	Wedgetail	1	NW		light	
1818	Bulwer's P	1	W			
1855	end observations					



DATE 23 May 64
Pg. # 1

time species # dir. hgt. remarks loc.

time	species	#	dir.	hgt.	remarks	loc.
0600	begin observations					
0710	Wedgetail	2	N		light phase	
0730	Sooty Tern	1				
0737	Harcourt's	1	NW			
0745	Sooty Tern	1	NW			
0802	Wedgetail S.	1	NW		light	
0821	Sooty Tern	5	NE		formed	
0906	Shearwater/ petrel	1	S			
0931	Wedgetail	2	E		light	
0932	Harcourt's sp.	1	W			
1040	Wedgetail	1	S		light	
	Bulwer's P	1	S			
1132	Wedgetail	2	W		light	
1147	Wedgetail	2	S		light	
1214	Wedgetail	3	S		light	
1218	Wedgetail	2				
1225	Sooty Tern	2	W		light	
1311	Wedgetail	1	W		light	
1322	Wedgetail	3	NW		light	
1344	Wedgetail	40	}		1 dark phase	
	Sooty Tern	2				
1400	Wedgetail	2	E		light	
1350	Harcourt's sp.	2	E			
1406	Harcourt's sp.	2	E			
1450	Sooty Tern	3	W			
1507	Sooty Tern	3	W			
1520	Storm Pet/Bulwer	1	E			
1607	Sooty Shear	1	NW		✓	
1615	Wedgetail	1	S		light	
1625	Sooty Shear	1	NW		✓	
1625	Shear/pet	1				
1634	Sooty Tern	1	SW			
1637	Tropicbird sp	1	SW			
1654	Wedgetail S.	1	W			
	Tropicbird	1				
	Pomarine Jaeger	1				
1754	Bulwer's P	1	W		larger than Wedgetail - heavier - dark underwing - white underparts - upper parts brown - nose white - some white about head. Fanned Tail when attracted by Wedgetail	



DATE 23 May 64
Pg. # 2

time species # dir. hgt. remarks loc.

1827 Newell's S. 1 S

1900 end observations



DATE 29 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0550	begin observations					
0530	Black-footed Albatross	1			seen by watch	
0900	Leach's Harcourt's sp	1	E			
1030	Wedgetail	1	N		light	
1130	Black-footed Albatross	2	NE		"pirated" from tug+barge headed SW	
1156	Leach's Harcourt's S.P.	1	SW			
1504	Leach's Harcourt's S.P.	1	NE			
1608	Leach's Harcourt's sp	1	NE			
1752	Sooty Shear	2	NW			
1758	Leach's Harcourt's S.P.	1	E			
1812	JFP Dark-rumped P.	1	E			
1816	Wedgetail	1	W		dark phase	
1828	Sooty Tern	1	NW			
1830	Wedgetail	1	NW			
1830	Black-footed A.	1				
1900	end observations					



DATE 25 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0515	R-T Tropicbird	1				
0610	begin observations					
0610	Sooty Tern	1				
1148	W-T. Tropicbird	1	S		adult	
1255	Sooty Tern Harcourts S.P.	1	W			
1306	Sooty Tern Harcourts sp	1	SW			
1414	Sooty Shear	1	NW			
1523	Harcourts sp	1	S			
1823	Newell's S.	1	N			
1845	end observations					



DATE 26 May 64
Pg. # 1

time species # dir. hgt. remarks loc.

0600 begin observations

0635 shear/petrel 1 NW

0807 Bulwer's P 1 SE

0817 Bulwer's P 1 W off stern

Wedgetail 2 W light

0827 ~~Harcourt's sp~~ 1 NW

0845 Bulwer's P 1 NW

1032 Wedgetail 1

1036 ~~Harcourt's sp~~ 1 SE dark - seen by watch

1415 Wedgetail 1 S dark phase

1506 ~~Harcourt's sp~~ 1 W

1525 Bulwer's P. 2 E

1625 Bulwer's P. 1 N

1657 Bulwer's P 1 W

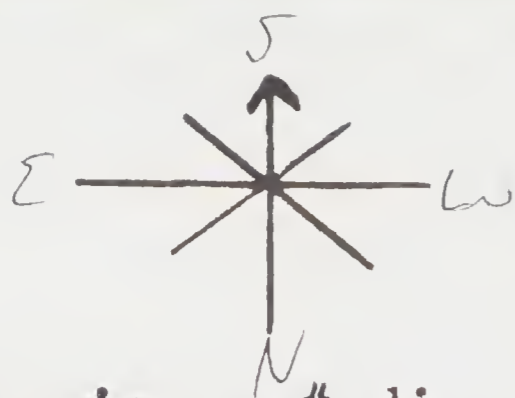
1726 Shear/Pet 1 NE

1825 ~~JFP~~ ~~Dark-rumped K~~ 1 W

1830 Wedgetail 1 NE dark sunset

1840 wedgetail 1 S light

1845 end observations



DATE 27 May 64
Pg. # 1

time species # dir. hgt. remarks loc.

0500 begin observations

0505 Shear/Pet 1 SE

0520 Wedgetail 2 S

0549 Wedgetail 12

0557 Bonin Is. P. 1 NW

0602 Bonin Is. P. 1 SE

0605 Wedgetail 2 S

0612 Bulwers P 1 N

0627 Wedgetail 1 W

0634 Tropicbird 1 NE

0639 Bulwers P 1 SE

0644 Petrel 1 NW

0711 D-R Petrel 1 NW

0720 DR Petrel 2 S

Wedgetail 4 S

0829 Wedgetail 1

0846 Sooty Tern 5

~~Shear/Petrel~~

wedgetails 5

0847 Bulwers P 1

wedgetail 2

0900 Wedgetail 7

0901 Petrel sp 1

0910 wedgetail 1

White-necked P. 1

0930 White-necked P. 1

0935 White-necked P. 2

0940 White-necked P. 1

Bulwers P 1

1015 Bonin Is. P. 1 NW

1023 Shear/Pet 1

1047 ~~Petrel~~ 1 N

1052 Shear/Pet 1

1100 Sooty Tern 20 ± 25

Wedgetail 100 ± 25

light

small feeding flock; some resting on water; all light phase.

light

by watch

light

no retrices - red-tailed body shape

} scattered - following ship. No flock

light

} small feeding flock

light

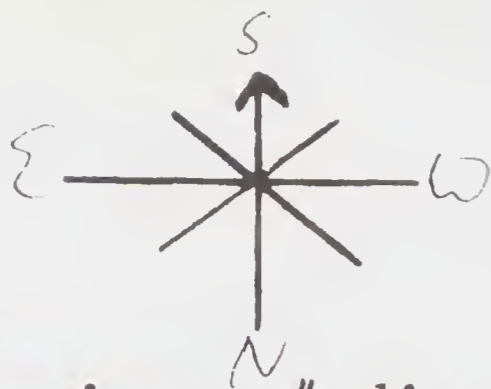
not in flock

dark - almost black, white flecks under wings
heavy molt. ? sitting in water
follows ship

heavy molt seemed to fly unwillingly - chased with
ship & fired at close range 3 times but missed
on water - fired once heavy molt

D-R or W-P

} feeding flock



DATE 27 May 64
Pg. # 2

time species # dir. hgt. remarks loc.

1105	DK Petrel	1	NE		molting molting	
1115	Sooty Tern	140 ± 25			} feeding flock	
	Wedgetail	80 ± 15				
JFP	DK Petrel	3				
	Bulwers P	1				
1120	Sooty Tern	70 ± 10			} feeding flock	
	Wedgetail	40 ± 10				
JFP	DK Petrel	2				
1140	Sooty Tern	50 ± 5			} feeding	
	Wedgetail	30 ± 10				
1142	Fairy Tern	1	N			
1153	DK Petrel	1	W			
1157	W-N Petrel	1	W			
	Wedgetail	1	SW			
1209	Shearwater sp	1	N			
1227	Sooty Tern	2	N		1 immature	
1245	Sooty Tern	100 ± 25			} feeding flock	
	Wedgetail	50 ± 25				
1246	Bulwers P	1	N			
1250	Bulwers P	1	E			
1254	Brown Is P.	1	NW		came close, feed, close but missed	
1256	Sooty Tern	3	NE			
1302	Wedgetail	1	E		seen by watch	
1312	Shear/petrel	1	S		scaling well above horizon but too far away	
1316	Wedgetail	1	E			
1318	Dark rumped P	1	SE		sitting in water - molting	
1320	Sooty Tern	1				
1335	Dark rumped P	3			} sitting on water, molting	
	White rumped P	1				
	Petrel sp	1				
1337	Wedgetail	4			petrel medium sized all dark chunky	
	petrel sp	1			light	
1339	Dark rumped P	1			all dark medium chunky	
					molting	
1349	Dark rumped P	1			molting	



DATE 27 May 64
Pg. # 3

time species # dir. hgt. remarks loc.

1345	Sooty Tern Wedgetail Shear/petrel	125 ± 25 50 ± 25			feeding flock	
1350	Tropicbird sp	1				
1400	Wedgetail	1				
1406	Shear/petrel	1				
1415	Sooty Shear	1	NW			
1418	Sooty Tern Wedgetail Shear/petrel	10 10			} scattered, but feeding flock	
1425	Bulwers P.	1			seen by watch	
1426	Shear/petrel	1			seen by watch	
1428	Shear/petrel	3	W			
1430	Harlequin S.P.	1	S			
1438	Wedgetail	1	S		light	
1443	Bonin Is P.	1	NW		molting	
1450	Bulwers P.	1	W			
1458	Shear/petrel	1	W			
1525	Bulwers P.	1	S			
1535	Wedgetail	1				
1553	Shear/petrel	1				
1643	DR Petrel					
1643	DR Petrel	1	S			
1707	DR Petrel	1	W			
1715	DR Petrel Bonin Is P.	1 1	W W		} sitting together on water	
1719	DR Petrel	1	SE		resting in water	
1735	Bulwers P.	1	N			
1740	Shear/petrel	1				
1745	Wedgetail	1	NW		light	
1750	Wedgetail	2	S		light	
1805	Dark-rumped P.	1	NW			
1820	Dark-rumped P. Bonin Is P.	1 1	SW SW		molting	
1826	Wedgetail	4	S		light	
1832	Dark-rumped P.	1			molting	
1835	Dark-rumped P.	1			molting	

1745 and observations

364
597
231
1192

26
11
11
24
414
706
1192



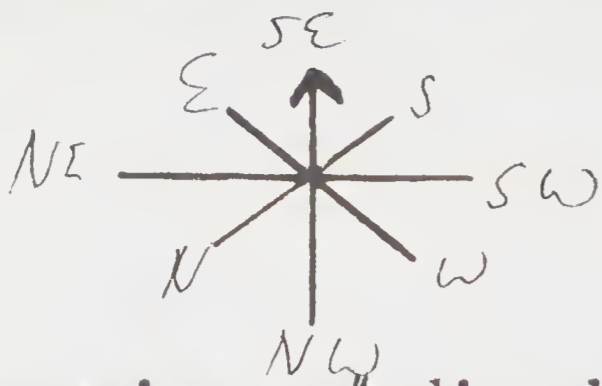
DATE 28 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0530	shear/petrel	1			seen by watch	
0540	begin observation					
0600	shear/petrel	3			seen by watch	
0620	Sooty Tern	1	NW			
0629	Dark-rumped P.	1	SE			
0632	White-necked P	1	W			
	Wedgetail	1			dark	
0638	Wedgetail	1	S		dark	
0645	shear/petrel	2				
0716	Bonin Is Petrel	1	W			
0720	Bonin Is P.	1	W			
0754	Petrel/shear	1				
0804	Red-tailed Tropicbird	1			overhead - adult	
0811	DR Petrel	1	N			
0820	Bonin Is P	1	NW			
	Shear Pet	1	NW			
0821	Red-T. Tropicbird	1	N		adult	
0840	DR Petrel	1	NW			
0845	Wedgetail	1	S		dark	
0851	Harcourt SP	1	SE			
0855	Petrel	1	NW			
0859	Petrel	1	SE			
0904	DR Petrel	1	NW			
	Wedgetail	1	NW		dark	
0910	Bonin Is P	1	NW			
0915	Wedgetail	2	SW		dark	
	Newell's S	1	SW			
0916	Wedgetail	1	SW		dark	
0920	DR Petrel	1	S			
0923	DR Petrel	2	NW			
	Bonin Is P	1	NW			
0925	DR Petrel	1	SW			
0928	Harcourt SP	2	SE			
0936	DR Petrel	1	S			
0940	DR Petrel	1	S			
0950	DR Petrel	3	S			
0958	Newell's S	1	N		on water	
	Wedgetail	1	SE		dark	
1000	Wedgetail	20	SW		dark	
1005	Harcourt SP	1			dark	
1005	Harcourt SP					
1010	Harcourt SP	1	NW			



DATE 28 May 64
Pg. # 2

	time	species	NW #	dir.	hgt.	remarks	loc.	
JFP	1019	DR Petrel	1	SE				
JFP	1040	DR Petrel	1	W				
		Wedgetail	5	W		dark transit		
BWP	1044	Bonin's P.	1	W				
Pex	1054	W-N Petrel	1	NW				
	1105	Wedgetail	30	±5		all dark		
JFP		Dark-rumped P.	12	±2		1 fired upon by Bratley, but not brought down		
		Sooty Tern	5			transit		
		Newell's S.	1					
		Shear/petrel	2					
	1115	Wedgetail	1			dark		
	1136	Bulwers P.	1	NW		N		
JFP	1140	Dark-rumped P.	1	SE				
		Wedgetail	1	SE		dark		
	1155	Leach's Harcourt's S.P.	1					
BWP	1203	Bonin's P.	1	NW				
	1211	Leach's Harcourt's SP	1	SE				
	1212	Wedgetail	1	SW		dark		
	1220	Leach's Harcourt's SP	1	SE		fired upon		
BWP	1225	Bonin's P.	1	SE				
JFP	1238	Dark-rumped P.	1	SE				
JFP	1315	D-R Petrel	1	NE				
	1340	Shear/Pet	2			by watch		
	1345	Shear/Pet	1			"		
	1416	Sooty Tern	35 ±2	NE		at least 1 immature		
		Wedgetail	10 ±2			not feeding	transit	
JFP		Dark-rumped P.	2+					
	1456	Sooty Tern	75 ±15					
		Wedgetail	20 ±5			feeding flock		
Pex		White-necked P.	1					
		Shear/petrel	4					
	1518	Shear/petrel	1					
	1522	Shear/petrel	1					

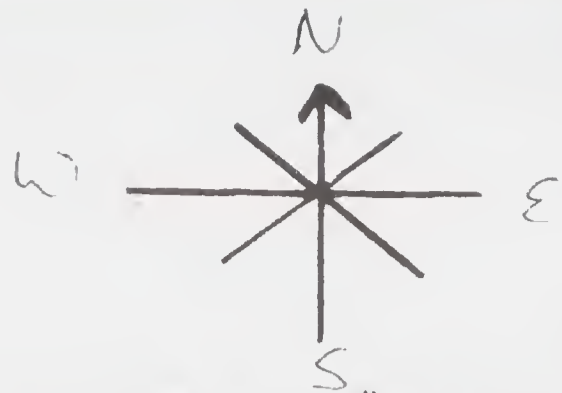


DATE 28 May 64
Pg. # 3

	time	species	#	dir.	hgt.	remarks	loc.	
PWP SFP	1552	White-necked P. Dark-rumped P.	1			sitting in water		
	1553	Leach's P. Harcourt's SP	1					
	1621	Wedgetail	1	SE		light!		
JFP	1626	Dark-rumped P.	1	SE				
JFP	1640	Dark-rumped P.	1	SE				
JFP	1645	Dark-rumped P.	1	E				
JFP	1705	Dark-rumped P.	1	SE				
	1747	Bulwers P.	1	NE				
JFP	1806	Bonin Is P.	1	NE				
	1820	end observations						

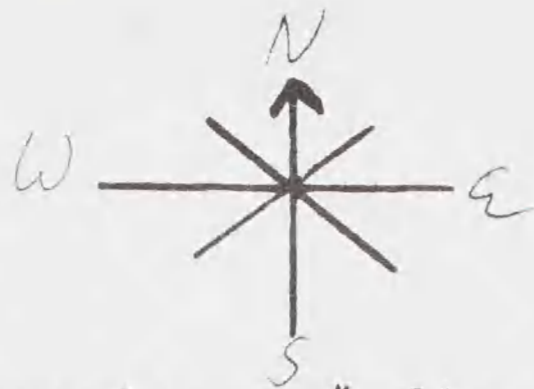
67
223
10
300

31
97
19
37
116
300



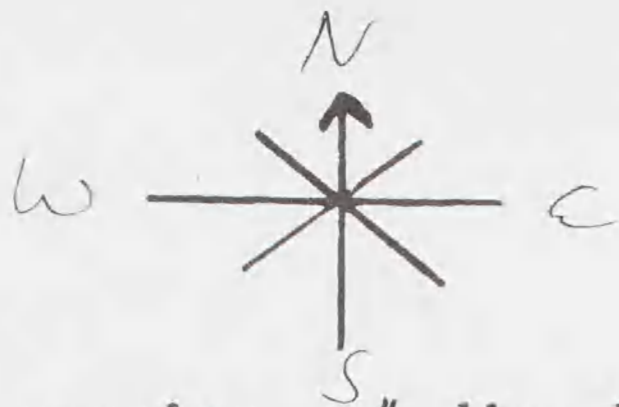
DATE 29 May 64
Pg. # 1

	time	species	#	dir.	hgt.	remarks	loc.
	0515	begin observations					
JFP	0515	DR Petrel	2	W			
	0525	Wedgetail	50			sitting - dark & light - watch	
	0526	Wedgetail	5	N		dark & light	
	0535	Sooty tern	1	N			
	0555	Wedgetail	4	N			
JFP	0557	DR Petrel	1	S			
	0559	Wedgetail	2	Z		dark	
JFP	0602	DR Petrel	1	W			
BWP	0606	Bonin Is P	1	W			
	0615	Sooty Tern	1	SW			
	0623	Wedgetail	1	W		dark	
	0630	Sooty tern	40-50			} feeding flock	
		Wedgetail	15-20				
JFP	0631	DR Petrel	3	E			
	0634	Newell's S	1	W			
BWP	0637	Bonin Is P	1	W			
	0645	Wedgetail	1	SE		dark	
	0730	Wedgetail	6	S		scatter over 360° - dark	
	0740	W-T Tropicbird	1			adult	
BWP	0757	Bonin Is P	1	W			
BWP	0800	Bonin Is P	1	W			
	0800	Wedgetail	3	W		travelling flock	
JFP		Dark-rumped P.	6				
P. ex		White-necked P.	1				
		Harcourt's S.P.	1				
	0816	Petrel sp	1				
JFP	0819	Dark-rumped P.	3	W		} travelling	
		Wedgetail	1				
		Shear/petrel	1				
P. ex	0820	White-necked P.	1				
P. ex		Petrel sp	1	W		W on DR	
JFP	0828	Dark-rumped P.	1	SW			
	0840	Wedgetail	1				
	0842	Petrel sp	2			light	
JFP	0850	Dark-rumped P.	1	SW		sitting in water	
	0852	Wedgetail	11	-		sitting on water	
P. ex	0858	White-necked P.	1	SW			



DATE 29 May 64
Pg. # 2

	time	species	#	dir.	hgt.	remarks	loc.
P. ex	0855	White-necked P	1	W			
	0902	Petrel sp	1	W			
	0905	Bulwers P	1	W			
BWP		Bonin Is P.	1	W			
JFP	0907	Dark-rumped P	3			} travelling	
P. ex		White-necked P	1	W			
BWP		Bonin Is P.	1				
	0910	Shear/petrel	1	E		sitting on water	
P. ex	0913	White-necked P	1	W			
	0920	Wedgetail	1	W		dark	
BWP		Bonin Is P	1				
	0925	Wedgetail	2			dark	
JFP	0926	Dark-rumped P	1	W		sitting in water	
P. ex		White-necked P	1	W			
	0928	Shear/petrel	1	E			
JFP	0935	Dark-rumped P	1	W			
		Newell's S.	1	W			
P. ex	0950	White-necked P	1	W			
		Petrel sp.	1	W			
	0958	Wedgetail	1	E		dark	
	1000	Wedgetail	1	NW		dark	
JFP		Dark-rumped P.	1	NW			
JFP	1014	Dark-rumped P	1	S			
	1015	Shear/Pet	1				
JFP	1030	Dark-rumped P	3	N			
JFP	1103	Dark-rumped P	10			} small feeding flock	
		Wedgetail	2	(dark)			
JFP	1109	Dark-rumped P	2	W			
P. ex	1201	White-necked P	1	SW			
	1240	Bulwers Petrel	1	W			
	1248	Sooty Tern	25				
		Wedgetail	10			dark	
JFP		Dark-rumped P	12	N		} travelling - some sat in water	
P. ex		White-necked P	2				
		Newell's S.	1				



	time	species	#	dir.	hgt.	remarks	loc.
JFP	1306	Sooty Tern	200 ± 50			} feeding flock land	
		Shear/petrel	70 ± 20				
		Newell's S	1+				
		Bulwers P.	1+				
		Wedgetail	1+				
		Dark-rumped P Shearwater/petrel	2+				
	1315	Bulwers P	1	NW			
	1320	Sooty Tern	2	NE		immature	
	1321	Bulwers P.	1	NW			
JFP	1324	Dark-rumped P	1	N			
	1331	Bulwers P	1	NW			
BWP	1332	Bonin Is P.	1	NW			
P.P.P.	1335	White-noded P.	1	SE			
	1342	Wedgetail	1	E			
JFP	1349	Dark-rumped P	1	S			
	1400	Bulwers P.	1	S			
	1416	Wedgetail	1	NW		land	
	1425	Sooty Tern	1				
BWP	1428	Bonin Is P.	1	W		sitting on water	
	1526	Wedgetail	1	S		light	
	1648	Wedgetail	1	S		light	
	1655	Wedgetail	1	S			
		Sooty Tern	1	⊙			
	1705	Wedgetail	3	E		light	
	1732	Sooty Tern	50 ± 25			feeding, then roosting	
		Shearwater/petrel	25 ± 15				
	1827	R-T Tropic bird	1				
	1830	end observations					

29
56
12
99
126
2321
643

372
175
96
643

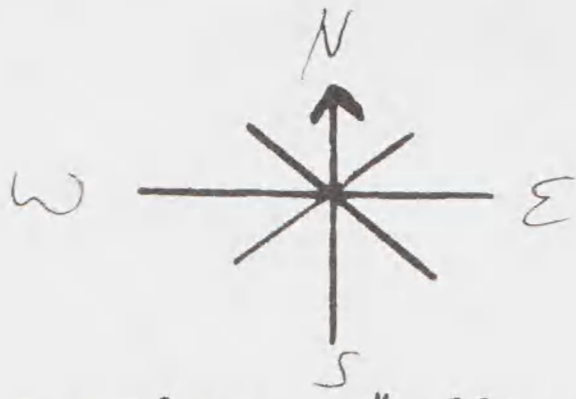
255
548
000 1/2 (511)
55

414
52
528
21
55



DATE 30 May 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0520	begin observations					
0525	Bonin Is P.	1	NE			
0546	Shear/petrel	1	W			
0554	Bonin Is P.	2	SW		seen by watch	
0602	Bonin Is P.	1	S			
0657	Wedgetail	2	S		light	
0808	Bonin Is. P.	1	S			
0845	D.R. Petrel	1	S			
0932	Bonin Is. P.	1	N			
1226	Bonin Is. P.	1	W			
1238	Shear/Pet.	1	W			
1417	Shear/Pet.	1	W			
1500	Shear/petrel	1	SW			
1512	Shear/petrel	1	W			
1515	Bonin Is P.	3	W			
1523	Shear/petrel	3	SW			
1605	Wedgetail	1	SW		dark	
1606	Harcourt's S.P.	1	NW			
1623	Shear/Pet.	1	W			
1635	D.R. Petrel	1	N			
1655	Shear/Pet.	1	W			
1705	Shear/Pet. Skua	1	SW		very large, to near booby size, all dark except white at base of primaries on underwing. Very heavy & chunky, short black tail (darker than rest of body). Short wings. Flew with slow stroke unlike any sea bird I've seen yet. Was sitting on water ahead of ship. When it flew, it went in SW direction. Mostly a Skua or giant petrel of some sort.	
1725	Bulwer's P.	1	W			
1844	Wedgetail	3	SW		light	
1845	end observations					



DATE 31 May 64
Pg. # 1

time species # dir. hgt. remarks loc.

0550 begin observations

0553 Wedgetail 1 N following ship - light

0607 Wedgetail 1 SW light

Bow

0610 Bonin Is. P. 1 W

0700 Wedgetail 2 N

0720 W-T Tropicbird 1 NE watch

0754 Bulwer's P 1 W

0830 Wedgetail 1 light - came aboard 0330 and caught by

0905 Petrel Sp 1 W watch. Released.

0917 Shear/petrel 1 W

1045 ~~Shear~~ ^{Leach's} ~~Harcourt's~~ 5 { all sitting in group upon water, when flushed they scattered.

1057 Wedgetail 1 N (light)

1240 Wedgetail 1 N light buzzed ship several times

1630 ~~Leach's~~ ~~Harcourt's~~ 1 E

1637 Wedgetail 1 N light

1656 R-T Tropicbird 1 E adult - very pink

1659 Wedgetail 1 S light

1815 Sooty Tern 1 SW

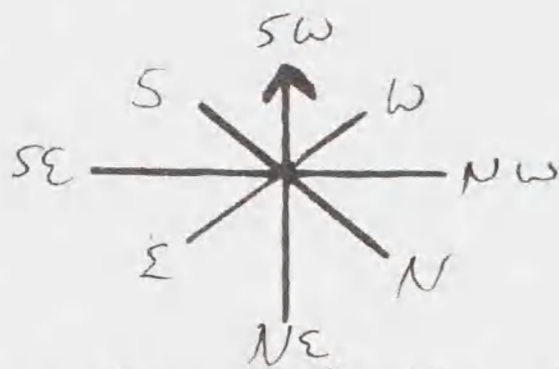
1835 end observations



DATE 1 June 64
Pg.# 1

time species # dir. hgt. remarks loc.

0515	begin observations					
0638	Shearwater/ petrel	1	NW		sat on water	
0805	D-R. Petrel	1	N		<u>not</u> molting	
0823	Sooty Tern?	1	N		by watch	
0942	R-T Tropicbird	1	N		adult	
1045	Wedgetail	1	S			
1235	R-T Tropicbird	1	E		adult	
1507	Tropicbird sp.	1			sat in water	
1750	Shearwater Harcourt's	1	W			
1800	B-F albatross	1			following ship	
1845	end observations					



DATE 2 June 64
Pg. # 1

time species # dir. hgt. remarks loc.

0445 begin observations

0446 B-F. Albatross 1

following ship — different bird than one sighted last night; lacks the white ramp of yesterday's birds

0500 R-T. Tropicbird 1 SE

adult

0745 shear/petrel 1

seen by watch

0951 ~~shear~~
Harcourt's S.P. 1

1007 Wedgetail 2 SW

light

1045 Bulwer's P 1 S

1125 Bulwer's P 1 NW

1135 R-T. Tropicbird 1 SW

without retinas

1246 ~~shear~~
Harcourt's S.P. 4

1302 Bulwer's P. 1 ~~SW~~ NW

sitting on + flying over small oil slick

1318 Bulwer's P 1

sitting by glass ball

1504 Bulwer's P. 1 W

flapping constantly against wind

1527 Bulwer's P 1 NE

1655 Bulwer's P 1 SE

1754 Wedgetail 4 NE

light

1755 Black-footed P 1

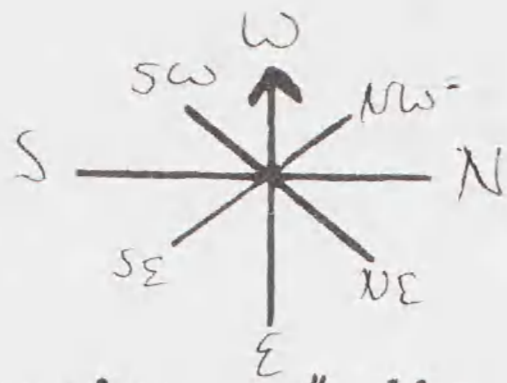
all day

1816 Dark-rumped P. 1 NE

not molting

1841 Tropicbird sp 1 SW

1850 end observations

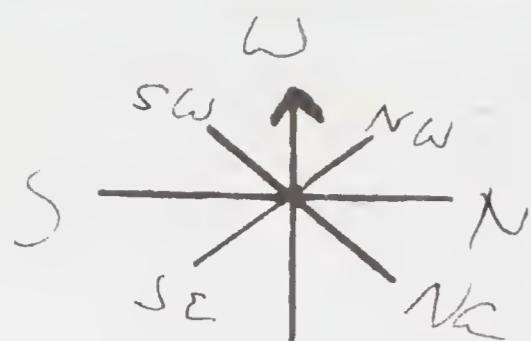


DATE 3 June 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0520	Sooty Tern Shearwater/petrel	1 1			seen by watch	
0535	begin observations					
0647	shear/petrel	1				
0650	Black-footed Albatross?	1			seen by watch at distance	
0707	Wedgetail	1	S		light	
0716	Sooty Tern	2	W			
0717	Shear Harcourt's SP.	2	N			
0734	Wedgetail	1	E		light	
0740	White-Tropicbird	1			sat on water	
0745	Sooty Tern	1	SE			
0808	Sooty Tern	2	E		adult	
0825	Sooty Tern Shear/Pet	4 2	E E		} small flock	
0845	W-T. Tropicbird	1	NW		adult flushed from water	
0911	Shear/Pet	1	S		watch	
0914	Newell's S.	1	N			
0923	Bulwer's P	1	NW			
0959	Sooty Tern	2	SE E			
1015	Sooty Tern	3	W			
1016	Shear/petrel	1	N			
1030	Sooty Tern	2	SE		1 immature	
1039	Wedgetail	1	W		following ship, light	
1040	Sooty Tern	5			scattered flock	
1044	Shear Harcourt's SP	1	NW			
1105	Sooty Tern	1	E			
1109	JFP Dark-rumped P	1	N		not molting	
1120	Sooty Tern	1	N			
1136	Sooty Tern	2	E			
1137	Wedgetail	1			light	
BWP? 1140	Brown Is P?	1	N			
1144	Sooty Tern	2	E			
1149	White-tailed T.	1	NW		sitting on water	
1200	Bulwer's P.	1	E			

239
63
1.50
352

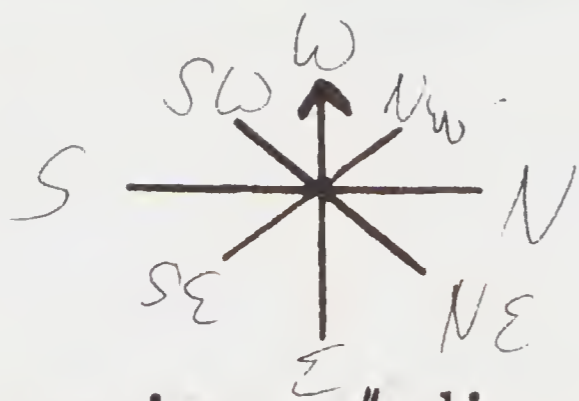
33
82
50
218.7
352



DATE 3 June 67
Pg. # 2

time species # dir. hgt. remarks loc.

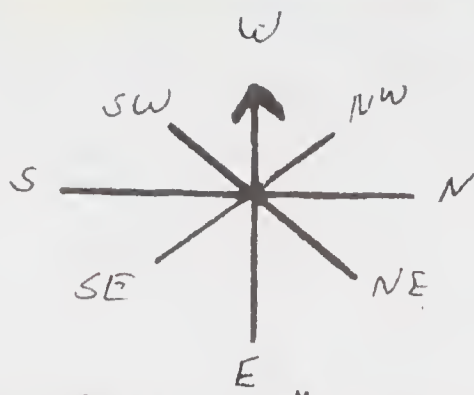
1207	Wedgetail	1	W		light	
1208	Frigate	1	E	200ft	adult male	
1209	Wedgetail	2	E		light	
1212	Tropicbird sp	1	W	<u>300ft</u>	circling above frigate	
1214	Sooty Tern	8	W		2 immatures + travelling	
1215	Black-footed A.	1			following ship	
1216	Wedgetail	1	W		light	
1225	Storm Petrel	2				
1245	Tropicbird	1		200ft	♂ adult	
1303	Sooty Tern	6			travelling	
1312	Tropicbird	1				
1325	Tropicbird	1				
	Tropicbird	1	NE			
1350	Wedgetail	1	S		dark	
1355	Navell's	2	S			
1430	B-F Albatross	2				
1431	Wedgetail	50-60			} feeding flock	
	Sooty Tern	8-12				
1442	Wedgetail	1	W		light	
1454	Navell's S.	1	S			
1457	Wedgetail S.	2	W			
1458	Red-tail TB	1	W		adult with long retrices	
1500	Bulwers P	1	E			
1506	Bulwers P	1	S		fixed at but no hits although bird chood self	
1535	Sooty Tern	2	W	150ft	soaring, then dropped down + passed ship into wind	
1537	Bulwers P.	1	C		passed under bow	1 immature
1555	Black-footed A.	3				
1608	Sooty Tern	3	NE			
1645	Sooty Tern	80 ± 20			} feeding flock	
	shearwater/petrel	40 ± 20				
1630	Sooty Tern	7			} small feeding flock	
	shearwater/petrel	4				
1705	Sooty Tern	8			small travelling flock at least 2 immatures	



DATE 3 June 84
Pg. # 3

time species # dir. hgt. remarks loc.

1712	Sooty Tern	1			seen by watch.		
1720	Sooty Tern	1	SE				
1750	Sooty Tern	30 ± 5			one dark } feeding flock		
	Wedgetail	20 ± 5					
1800	Sooty Tern	4	N				
	Storm Petrel	1					
1815	Bulwer's P	1	W				
1853	W-T Tropicbird	1	NE		no retrices, but black markings in wings + tail		
1857	Sooty Tern	1	SW				
1900	Black-footed Albatross	2			60		
1910	end observations						



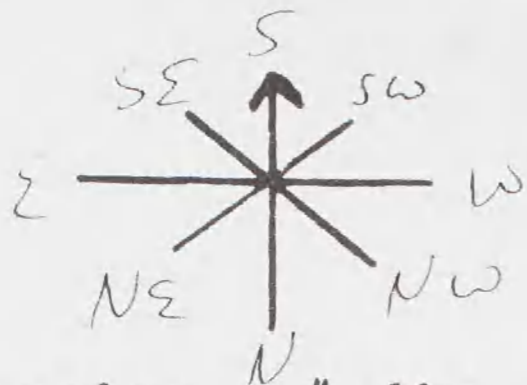
DATE 4 June 64
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0520	Newell's S	1			by watch	
0525	Bulwer's P	1			by watch	
0555	begin observation					
0556	B-F Albat	3			following ship	
0602	Sooty Tern	1	E		adult	
0630	Bonin Is. P.?	1			watch	
0655	Wedgetail	2	SE		both dark	
0713	D-R Petrel?	1	NW		Immature light colored "W" across wings like a wedgetail, white on undertail coverts & under tail, may have had white forehead, very slow wingbeats almost like wedgetail — dark above, white below. (probably New Zealand Shear)	
0745	R-T Tropicbird	2	S		circled ship - adult	
0750	R-T Tropicbird	2	NE		all four seen at once	
0753	Bulwer's P	1	S			
0800	Harcourt's SP.	2	N			
0802	Wedgetail	1	SW			
0805	Sooty Tern	1	↔			
0817	Sooty Tern	2	S			
0828	Newell's S	1	SW			
0830	Black Footed Albatross	4			following ship	
0842	Harcourt's SP.	1	SE			
0850	Sooty Tern	1	W			
0855	Red-footed Booby	1	NW		immature	
0857	Sooty Tern	15 ± 2			small feeding flock	
0900	Black-footed A.	5			in water around ship during hydro	
1020	Sooty Tern	1	NE		adult	
1033	Tropicbird	1				
1038	R-T Tropicbird	1	S		flush from water — no retrices	
1044	Bulwer's P	1	SE			
1046	R-T Tropicbird	3	S		adult	
1107	Wedgetail	1	NE		light	
1114	Christ Is. S.	1	N			
1124	Sooty Tern	2	W			



DATE 4 June 64
Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1145						
1145	R-T. Tropicbird	1	E			
1203	R-T Tropicbird	1	S			
1206	Wedgetail	1	NW		light	
1245	Bulwer's Petrel	2	S			
1305	Bulwers P.	1	SW			
1321	Red-tailed T.b.	2	SW			
1337	Wedgetail	3	E		light	
1342	Harcourts SP.	2	W			
1355	Black footed A.	7				
1356	Bulwers P	2				
1414	Wedgetail	1	N		light	
1428	Wedgetail	3	S			
1438	Sooty Tern	1			light following ship	
1441	White-tailed TB	1	N			
1442	Wedgetail	1			joined 3 behind ship	
1448	Bulwer's Petrel	1	SW			
1451	Bulwer's Petrel	1	W			
1503	Bulwer's P	1	E			
	Wedgetail	1	N			
1504	Sooty Tern	4	N			
1505	Bulwer's P	2	S			
1515	Bulwer's P	1	W			
1525	Newell's S	1	W			
1526	Sooty Tern	2	S			
1535	Bulwer's P	1	W			
1545	Sooty Tern	3	S		following ship - joined other 3, now 5	
1552	Wedgetail	2			" "	
	Bulwer's	1				
1605	Newell's S	1	E			
1650	Newell's S	2	S			
1655	Sooty Tern	3			3 following ship	
1657	Sooty Tern	3				
1711	Harcourts	1	N			
1720	Sooty Tern	2	N			
1737	Sooty Tern	3	NW			

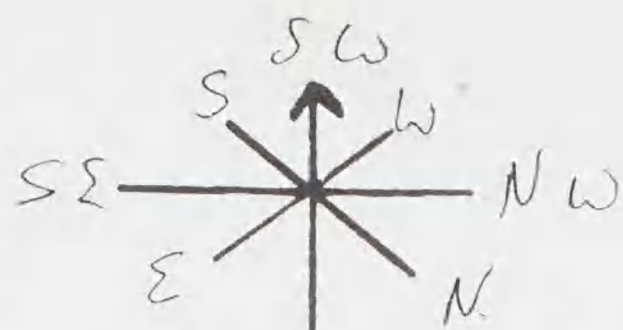


DATE 4 June 64
Pg. # 3

time species # dir. hgt. remarks loc.

1745	Sooty Tern	1	N			
1746	Newell's S.	1	W			
1748	Wedgetail	1			light	
1758	White-tailed T.B.	1	SE		sitting on water	
1759	Newell's S.	1	N			
1800	sooty tern	1	NE			
1801	Shearwater petrel	1	W			
1805	Sooty Tern	3	N			
1806	shear/petrel	1	SW			
1810	bird	1				
1815	Harcourt's S.P.	1			large + white? seen by watch	
1816	wedgetail	1			joined buddy behind slugs	
1817	Bulwers P	1	W			
1825	Sooty Tern	1	E			
1837	Bulwers P.	1	W			
1847	Sooty Tern	1				
1854	Sooty Tern	1	SW			
1900	Black-footed Albatross				banded 757-60904	
1905	Sooty Tern	1				
1908	Sooty Tern	2				
1910	Black-footed A.	6				
1915	end observations					

32
18
18
13
55
136



DATE 5 June 64

Pg. # 1

time species ^{NE} # dir. hgt. remarks loc.

0555 begin observations

0600 Newell's S. 1

0602 Sooty Tern 1

0616 Red-footed B 1 N adult

0617 Sooty Tern 6 N scattered

0618 Noddy Tern 2 N

0619 Wedgetail 1 N

~~Brown Is P~~ 1 N

0620 Sooty Tern 2 N

0621 Noddy Tern 1 N

0622 Wedgetail 1 NE light

0625 sooty Tern 75 ±15 } feeding
 Wedgetail 35 ±15 }
 Newell's S. 1 }
 Red-footed B. 6 } adult

0626 Redfooted B 4 N adult

0631 Red-footed B 6 N scattered

0638 Red-footed B. 6 N scattered

0639 Sooty Tern 50 ±10 } feeding
 Wedgetail 10 }
 Red-footed B 4 }

0640 Newell's S 2

0641 Noddy Tern 25 ±5

0642 Frigate 1 ~~feeding~~

0643 Red-footed B 1 NE

0644 Sooty Tern 1

0645 Noddy T 1

0650 Sooty Tern 75

Noddy Tern 30

Red-footed B. 10 feeding

Wedgetail 10

0651 Sooty Tern 100

Noddy Tern 25 feeding

Wedgetail 15

Red-footed B. 10

Frigate 2



DATE 5 June 64
Pg. # 2

time species # dir. hgt. remarks loc.

0701 Sooty Tern 50
Noddy Tern 25
Red-footed B 11
Wedgetail 5

feeding

12 0705 Sooty Tern 50
Noddy 25
Red-footed B 5
Nauells 2
Wedgetail 8

feeding

0710 Sooty Tern 40
Noddy Tern 20
Red Foot B. 6
Wedgetail 4
Fairy Tern 1

feeding

0712 Red footed B 4
Noddy Tern 1

sitting on water

0715 Red-foot B 4
Noddy Tern 1
Sooty Tern 2

scattered

0720 Sooty Tern 25
Noddy Tern 10
Wedgetail 5

feeding

13 0725 Sooty Tern 125
Noddy Tern 50
Red-footed B 10
Wedgetail 15
Frigate 2

feeding

0728 Red-footed B 1
Dark-rumped B 1
Fairy Tern 1

not molting

0732 Sooty Tern 50
Noddy Tern 15
Wedgetail 5
Red footed B 5

feeding

884



DATE 5 June 64
Pg. # 3

time	species	#	dir.	hgt.	remarks	loc.
0740	Sooty Tern	20				
	Noddy Tern	5				
	Red foot B	1			feeding	
	Wedgetail	2				
0750	Frigate	1				
0758	Sooty Tern	4				
0807	Sooty Tern	20				
	Common Noddy	8			feeding	
	Wedgetail	20				
	Bulwer's P	1				
	R-F Booby	1				
0818	Wedgetail	1	N			
	R-F Booby	1	NE			
0825	R-F Booby	2	N			
0835	Wedgetail	3	N			
	Bulwer's P	1	N			
0843	B-F Albatross	3			following ship	
	Wedgetail	1	N			
	Bulwer's P	1	S			
0850	Wedgetail	1	W			
	Newell's S	1	W			
0900	Sooty Tern	1	NW			
0907	Bulwer's P	2	N			
0917	Wedgetail	1	E			
0930	Sooty Tern	3	E			
	Wedgetail	1	NW			
0935	Gray-Backed Tern	2	sw		circled ship in wide arc, then headed sw - adult	
0945	Sooty Tern	2				
	R-F Booby	1	N			
0951	Bulwer's P	1	N			
	Brown Booby	1	W		adult	
	Sooty tern	4	W			
0958	Wedgetail	1	sw			
	Bulwer's P	1	E			
	Common Noddy	4	N			
1007	Brown Booby	1	E			
	Sooty Tern	4				
	Common Noddy	1	N			
1012	Sooty Tern	3	W			
1017	Bulwer's P	2	W			
	Hawaiian Noddy	1	W			
1021	Sooty Tern	3	W			
	Noddy Tern	1	E			



DATE 5 June 64
Pg.# 4

time	species	#	dir.	hgt.	remarks	loc.
1025	Noddy Tern	2	W			
	Sooty Tern	2	W			
1026	Tropicbird sp	1			seen by watch, sitting on water	
1032	Bulwers P	1	W			
	Noddy Tern	1	W			
	Wedgetail	1	E			
	Newell's S.	1	W			
1035	Red-footed B	2	E			
1042	Newell's S.	1	W			
1046	Sooty Tern	29			loose flock - travelling	
1049	Bulwers P	1	E			
1050	Sooty Tern	2	W			
1055	Sooty Tern	1	W			
	Noddy Tern	1	E			
1057	Sooty Tern	2	NW			
	Noddy Tern	1	SE			
1100	Sooty Tern	5	NW			
1102	Noddy Tern	8	SE			
	Sooty Tern	1	NW			
	Wedgetail Shear	3	S		flight	
1110	Noddy Tern	5	S			
1117	Sooty Tern	3	N			
	Noddy Tern	6	N+S			
	Hawaiian Noddy	1	SW			
1128	Noddy Tern	1	S			
1130	Sooty Tern	6	S			
	Noddy Tern	4	N			
1135	Sooty Tern	1	N			
1146	Sooty Tern	3	N			
	Noddy Tern	2	N			



DATE 5 June 64

Pg. # 5

time	species	#	dir.	hgt.	remarks	loc.
1150	Sooty Tern	4	SE			
1155	Sooty Tern	6	SE			
	Com. Noddy	1	E			
1200	Sooty Tern	1	SE			
1203	Wedgetail	2	SE			
1209	Sooty Tern	2	SE			
	Common Noddy	1	NE			
1214	Com. Noddy	8	SE			
1220	Sooty Tern	8	SE			
1230	end observation					

58
11
120
50
239

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART B

DATE 17 May 64

Time at sunrise = ⁰⁸⁰⁰ Position at sunrise = 20° 54' N 156° 28' W

Time at sunset = ¹⁸⁵⁷ Position at sunset = 19° 54' N 157° 00' W

Miles traveled from 0000 hours to sunrise = —

Miles traveled from sunrise to sunset = 105

Miles traveled from sunset to 2400 hours = 54

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

3.

4.

5.

6.

DATE 18 May 64

Time at sunrise = ⁰⁵⁵⁶ Position at sunrise = 17° 58' N 157° 31' W

Time at sunset = ¹²⁵¹ Position at sunset = 15° 47' N 157° 00' W

Miles traveled from 0000 hours to sunrise = 62

Miles traveled from sunrise to sunset = 131

Miles traveled from sunset to 2400 hours = 56

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

3.

4.

5.

6.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 19 May 64

Time at sunrise = ⁰⁵⁵⁹ Position at sunrise = 14° 07' N 156° 59' W

Time at sunset = ¹⁸⁴⁶ Position at sunset = 11° 52' N 157° 02' W

Miles traveled from 0000 hours to sunrise = 44

Miles traveled from sunrise to sunset = 135

Miles traveled from sunset to 2400 hours = 47

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

DATE 20 May 64

Time at sunrise = ⁰⁵⁵⁹ Position at sunrise = 10° 55' N 155° 47' W

Time at sunset = ¹⁸³¹ Position at sunset = 10° 06' N 154° 00' W

Miles traveled from 0000 hours to sunrise = 55

Miles traveled from sunrise to sunset = 124

Miles traveled from sunset to 2400 hours = 60

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 21 May 64

Time at sunrise = ⁰⁵⁵¹ Position at sunrise = 11°59'N 153°58'W

Time at sunset = ¹⁸³⁹ Position at sunset = 14°10'N 154°01'W

Miles traveled from 0000 hours to sunrise = 53

Miles traveled from sunrise to sunset = 131

Miles traveled from sunset to 2400 hours = 36

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

3.

4.

5.

6.

DATE 22 May 64

Time at sunrise = ⁰⁵⁴⁶ Position at sunrise = 15°50'N 154°00'W

Time at sunset = ¹⁸⁴⁵ Position at sunset = 17°53'N 154°00'W

Miles traveled from 0000 hours to sunrise = 64

Miles traveled from sunrise to sunset = 123

Miles traveled from sunset to 2400 hours = 55

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

3.

4.

5.

6.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 23 May 64

Time at sunrise = ⁰⁵³⁸ Position at sunrise = 19° 38' N 154° 00' W

Time at sunset = ¹⁸⁵¹ Position at sunset = 21° 54' N 154° 01' W

Miles traveled from 0000 hours to sunrise = 50

Miles traveled from sunrise to sunset = 136

Miles traveled from sunset to 2400 hours = 36

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

DATE 24 May 64

Time at sunrise = ⁰⁵³⁰ Position at sunrise = 23° 30' N 154° 00' W

Time at sunset = ¹⁸⁴⁸ Position at sunset = 23° 29' N 151° 56' W

Miles traveled from 0000 hours to sunrise = 60

Miles traveled from sunrise to sunset = 124

Miles traveled from sunset to 2400 hours = 49

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

SI-MNH-955b
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART B

DATE 25 May 64

Time at sunrise = ⁰⁵²² Position at sunrise = 22°48'N 150°58'W

Time at sunset = ¹⁸²⁷ Position at sunset = 20°20'N 151°24'W

Miles traveled from 0000 hours to sunrise = 49

Miles traveled from sunrise to sunset = 138

Miles traveled from sunset to 2400 hours = 40

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

DATE 26 May 64

Time at sunrise = ¹⁰⁵²⁷ Position at sunrise = 18°55'N 151°03'W

Time at sunset = ¹⁸³² Position at sunset = 16°42'N 150°57'W

Miles traveled from 0000 hours to sunrise = 55

Miles traveled from sunrise to sunset = 133

Miles traveled from sunset to 2400 hours = 44

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART B

DATE 27 May 64

Time at sunrise = ⁰⁵³³ Position at sunrise = 14° 51' N 151° 01' W
Time at sunset = ¹⁸²⁵ Position at sunset = 12° 42' N 150° 59' W
Miles traveled from 0000 hours to sunrise = 67
Miles traveled from sunrise to sunset = 129
Miles traveled from sunset to 2400 hours = 59

	TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
1.				
2.				
3.				
4.				
5.				
6.				

DATE 28 May 64

Time at sunrise = ⁰⁵³⁸ Position at sunrise = 11° 11' N 150° 34' W
Time at sunset = ¹⁸¹⁰ Position at sunset = 10° 16' N 148° 30' W
Miles traveled from 0000 hours to sunrise = 49
Miles traveled from sunrise to sunset = 133
Miles traveled from sunset to 2400 hours = 44

	TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
1.				
2.				
3.				
4.				
5.				
6.				

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 29 May 64

Time at sunrise = ^{V 0528} Position at sunrise = 11° 26' N 148° 02' W

Time at sunset = ¹⁸¹⁴ Position at sunset = 13° 21' N 148° 05' W

Miles traveled from 0000 hours to sunrise = 62

Miles traveled from sunrise to sunset = 115

Miles traveled from sunset to 2400 hours = 62

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

3.

4.

5.

6.

DATE 30 May 64

Time at sunrise = ⁰⁵²¹ Position at sunrise = 15° 12' N 147° 54' W

Time at sunset = ¹⁸²² Position at sunset = 17° 31' N 148° 04' W

Miles traveled from 0000 hours to sunrise = 49

Miles traveled from sunrise to sunset = 139

Miles traveled from sunset to 2400 hours = 52

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

3.

4.

5.

6.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART B

DATE 31 May 64

Time at sunrise = ⁰⁵¹⁴ Position at sunrise = 19°10'N 147°57'W

Time at sunset = ¹⁸²⁸ Position at sunset = 20°30'N 147°58'W

Miles traveled from 0000 hours to sunrise = 47

Miles traveled from sunrise to sunset = 80

Miles traveled from sunset to 2400 hours = 75

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

DATE 1 June 64

Time at sunrise = ⁰⁵⁰⁸ Position at sunrise = 22°10'N 147°58'W

Time at sunset = ¹⁸³⁶ Position at sunset = 24°40'N 148°00'W

Miles traveled from 0000 hours to sunrise = 45

Miles traveled from sunrise to sunset = 150

Miles traveled from sunset to 2400 hours = 41

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

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3-4-64.

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 2 June 64

Time at sunrise = ⁰⁴⁵⁹ Position at sunrise = 26°20'N 147°53'W

Time at sunset = ¹⁸⁴⁷ Position at sunset = 25°24'N 150°10'W

Miles traveled from 0000 hours to sunrise = 59

Miles traveled from sunrise to sunset = 150

Miles traveled from sunset to 2400 hours = 52

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

DATE 3 June 64

Time at sunrise = ⁰⁵¹⁷ Position at sunrise = 24°59'N 151°50'W

Time at sunset = ¹⁹⁰³ Position at sunset = ~~24°56'N 154°00'W~~
24°58'N 154°26'W

Miles traveled from 0000 hours to sunrise = 50

Miles traveled from sunrise to sunset = 130

Miles traveled from sunset to 2400 hours = 78

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

4 June 64

Time at sunrise = ⁰⁵³⁵ Position at sunrise = 25° 00' N 156° 22' W

Time at sunset = ¹⁹¹¹ Position at sunset = 23° 30' N 156° 58' W

Miles traveled from 0000 hours to sunrise = 64

Miles traveled from sunrise to sunset = 128

Miles traveled from sunset to 2400 hours = 41

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

1.

2.

3.

4.

5.

6.

DATE

5 June 64

Time at sunrise = ⁰⁵⁴⁴ Position at sunrise = 23° 00' N 157° 22' W

Time at sunset = ¹²⁰⁰ Position at sunset = 21° 18' N 157° 32' W

Miles traveled from 0000 hours to sunrise = 49

Miles traveled from sunrise to sunset = 73

Miles traveled from sunset to 2400 hours = —

TIME OF FIX TYPE OF FIX LONGITUDE LATITUDE

1.

2.

3.

4.

5.

6.

B. C. F. Townsend Cromwell May 1964 Cruise

The May 1964 Townsend Cromwell cruise was the fourth of a series of cruises run by the U. S. Fish and Wildlife Bureau of Commercial Fisheries covering a fixed grid to the east of the main Hawaiian Islands for the purpose of determining the variations in structure of the water masses and currents of this area. The cruise started 17 May 64 and ended 5 June 64, covering approximately 4600 miles in 20 days.

Pacific Project personnel maintained daily sunrise to sunset bird observations for a total of 253.1 hours. In addition Project personnel aided in recording weather observations and in taking bathythermograph traces. Project personnel included David Bratley and Warren King.

Upon availability of oceanographic data, an attempt will be made to correlate bird distribution with prevalent oceanographic conditions of the cruise.

SPECIES ACCOUNT

Black-footed Albatross

Numbers of this species dropped 46% from 37 in April to 20 in May. This decline in numbers was accompanied by a northward trend in distribution. The southern limit of the range of this species seems to coincide with the convergence area between the North Pacific Central Water and the California Current Extension. One of this species was banded and released on 4 June 64.

Wedgetailed Shearwater

Numbers of this species rose from 352 in April to 1637 in May, an increase of 365%. Dark phase birds predominated south of 13°N this cruise, indicating a northward extension of the feeding grounds for the southern populations. In feeding flocks around Oahu, there were proportionately fewer Wedgetails than previous months, due probably to the beginning of egg laying in main Hawaiian Island colonies.

Sooty Shearwater

The last of 44 Sooty Shearwaters seen this month passed northwest on 27 May. Between 18 March and 27 May 1967 of this species were observed, all heading approximately northwest. Peak numbers were observed 3 April when 1337 were seen.

Christmas Island Shearwater

Two of this species were seen in the grid area this month, one north of Oahu and the other toward the southern end of the grid.

Newell's Shearwater

A sharp 450% increase from 12 in April to 66 in May was experienced this month due probably to the beginning of its breeding cycle in the main Hawaiian Islands. This species was seen in all parts of the grid except the eastern portion. Concentrations were found around Oahu and across the southern portion of the grid. This species was observed frequently in small numbers in feeding flocks composed mainly of Sooty Terns and Wedgetailed Shearwaters.

Bonin Island Petrel

Numbers of this species rose abruptly from 2 in April to 69 in May, all but one of which were in the south to southeastern portions of the grid area. Virtually all of these birds were undergoing heavy molt. Several were flushed from the water by the approaching ship.

Herald's Petrel?

Two medium sized chunky petrels with brown upperparts, white underparts and mottled dark underwings were probably this species. Both birds were clearly seen at close range.

Dark-rumped Petrel

This species rose 671% in numbers, from 17 in April to 131 in May. All but 6 of these were in the southern portion of the grid area. All of these southern birds were undergoing heavy molt. Primary and secondary wing feathers were often missing and the entire dark upperparts were splotched and mottled. Many birds were flushed from the water by the approaching ship. The northern birds had without exception fresh plumage.

Since egg dates for Hawaii are thought to be April-May and for the Galapagos race June-July, it may be the case that the northern, fresh plumaged birds are the Hawaiian race and the southern, heavily molting birds are from the Galapagos Islands.

White-necked Petrel

Numbers of this species increased from three in April to 34 in May. All of these were seen in the southern end of the grid area. All were undergoing heavy molt. Many had missing primary and secondary wing feathers, and birds were flushed from the water by the approaching ship. This species was often seen in close company with molting Dark-rumped Petrels, sometimes two or three of each species sitting together on the water. This species was found in the southern feeding flocks along with molting Dark-rumped Petrels, dark phase Wedgetails and Sooty Terns.

Bulwer's Petrel

This species increased in number 536%, from 28 in April to 178 in May. Large concentrations of this species were found around Maui and Oahu. Small flocks of up to nine individuals were seen, and a number of birds were seen in and around the edges of feeding flocks of Sooty Terns and Wedgetailed Shearwaters, but none was observed feeding.

Harcourt's Storm Petrel

Numbers of this species showed a 50% decrease from 129 in April to 64 in May. This species still showed the relatively random distribution throughout the entire grid area it has exhibited in past months. On one occasion four birds were seen sitting on and flying over a slick.

Red-tailed Tropicbird

This species increased in number 257% from 7 in April to 25 in May. There was a minor concentration of these birds in the northwestern corner of the grid area, where on two occasions courtship flight was observed.

White-tailed Tropicbird

Numbers of this species increased 500% from 4 in April to 24 in May. Twelve of these were seen along the coast of Maui where the species is known to breed.

Blue-faced Booby

This species increased 125% from 4 in April to 9 in May. All were immature or sub-adult birds. All were seen in the southwest corner of the grid area.

Brown Booby

Two of this species were seen within sight of the coast of Oahu where it breeds.

Red-footed Booby

This species increased 52% from 71 in April to 108 in May. All but one of these were seen within 60 miles of Oahu where they breed. One bird, an immature, was seen in the northwest corner of the grid area.

Great Frigatebird

Eleven of this species were seen in the grid area, 2 at the southern end and the remaining 9 near Oahu, where they roost.

Grey-backed Tern

Two of this species were observed flying toward Moku Manu, where a small breeding colony is established.

Sooty Tern

This species increased 91% in numbers, from 1633 to 3117. As in past months concentrations of this species occurred near Oahu and in the southern portion of the grid area. On several occasions immature birds were observed in the company of adults, both in the north and south, since the immatures of Moku Manu, off Oahu are now all flying, in addition to the immatures of the southern populations.

Noddy Tern

This species increased 81% from 165 to 304. All of these were seen within 50 miles of Oahu or Maui. In feeding flocks to the north of Oahu they were in the proportion of one Noddy for every three Sooty Terns.

Hawaiian Noddy Tern

Seven of this species were seen in May, five within sight of Maui and two within sight of Oahu.

Fairy Tern

Seven of this species were seen in the grid area in May. The species was absent from the area in April. Five were seen in the southern portion of the grid and two were seen just north of Oahu.

Skua

Two birds, which could only be of this species, were observed in the grid area on 17 May and 30 May. Both birds were carefully observed at close range. This species is not unexpected as a stray in the central Pacific area.

Pomarine Jaeger

Two birds of this species were observed in the grid area on 19 May and 23 May, both heading north.

TABLE I

Date	Minutes of Observation	Miles Covered
May 17	657	105
18	775	131
19	767	135
20	752	124
21	768	131
22	779	123
23	793	136
24	798	124
25	795	138
26	785	133
27	772	129
28	752	133
29	766	115
30	781	139
31	794	80
June 1	808	150
2	828	150
3	826	130
4	816	128
5	376	73
Total 20	15188	2507
Average	759.4	125.4

TABLE II

<u>Date</u>	<u>Total Birds</u>	<u>Total Sightings</u>	<u>Birds/Sighting</u>	<u>Birds/ Mile</u>	<u>Total Flocks</u>	<u>Total Birds in Flocks</u>
May 17	619	105	5.80	5.80	8	472
18	320	41	7.80	2.44	6	269
19	410	78	5.13	3.04	9	315
20	583	78	7.47	4.70	7	489
21	29	25	1.16	.22	0	0
22	36	18	2.00	.29	3	20
23	93	31	3.00	.68	2	47
24	15	13	1.15	.12	0	0
25	7	7	1.00	.05	0	0
26	19	16	1.19	.14	0	0
27	1192	80	14.90	9.24	11	1093
28	300	65	4.62	2.26	5	223
29	643	72	8.93	5.51	12	560
30	31	23	1.35	.22	0	0
31	22	17	1.29	.28	1	5
June 1	9	9	1.00	.06	0	0
2	25	18	1.39	.17	0	0
3	325 ³⁵²	65	5.42	2.71	9	272
4	136	78	1.74	1.06	1	15
5	1377	72	19.13	18.86	13	1136
Total						
20	6218	811	---	---	87	4916
Average	310.9	40.6	4.77	2.89	4.4	245.8

TABLE III

<u>Date</u>	<u>Procellariids</u>	<u>Tropicbirds</u>	<u>Terns</u>	<u>Boobies</u>	<u>Frigatebirds</u>
May 17	330	12	271	5	0
18	160	2	158	0	0
19	182	1	217	9	0
20	291	3	280	3	2
21	26	1	2	0	0
22	22	2	12	0	0
23	73	1	18	0	0
24	14	0	1	0	0
25	5	1	1	0	0
26	19	0	0	0	0
27	483	2	707	0	0
28	182	2	116	0	0
29	320	2	321	0	0
30	30	0	0	0	0
31	19	2	1	0	0
June 1	5	3	1	0	0
2	22	3	0	0	0
3	153	8	187	0	3
4	63	16	55	1	0
5	176	1	1090	104	6
Total					
20	2575	62	3438	122	11
Average					
	128.8	3.1	171.9	6.1	.6

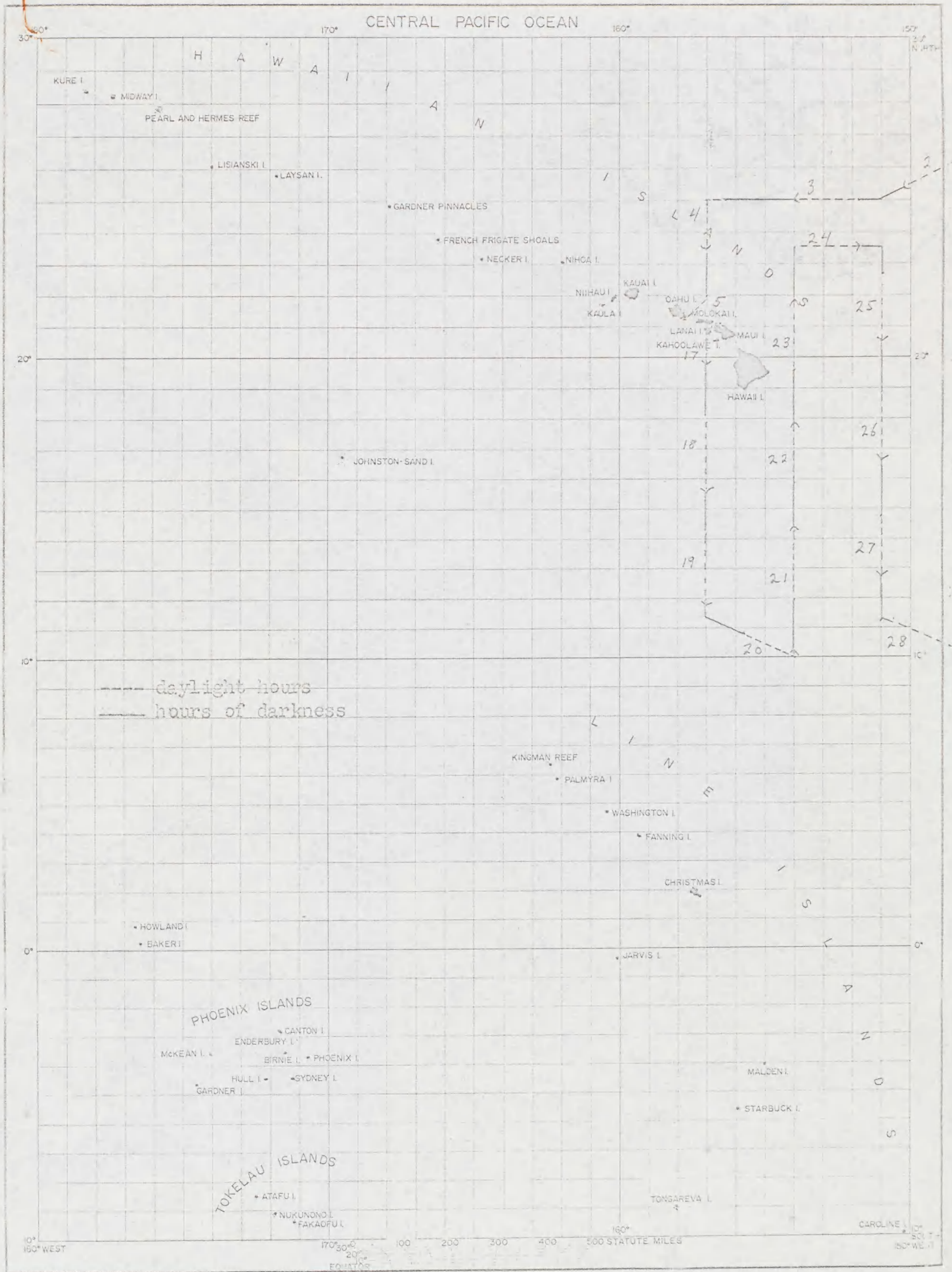
TABLE IV
PROCELLARIID BREAKDOWN

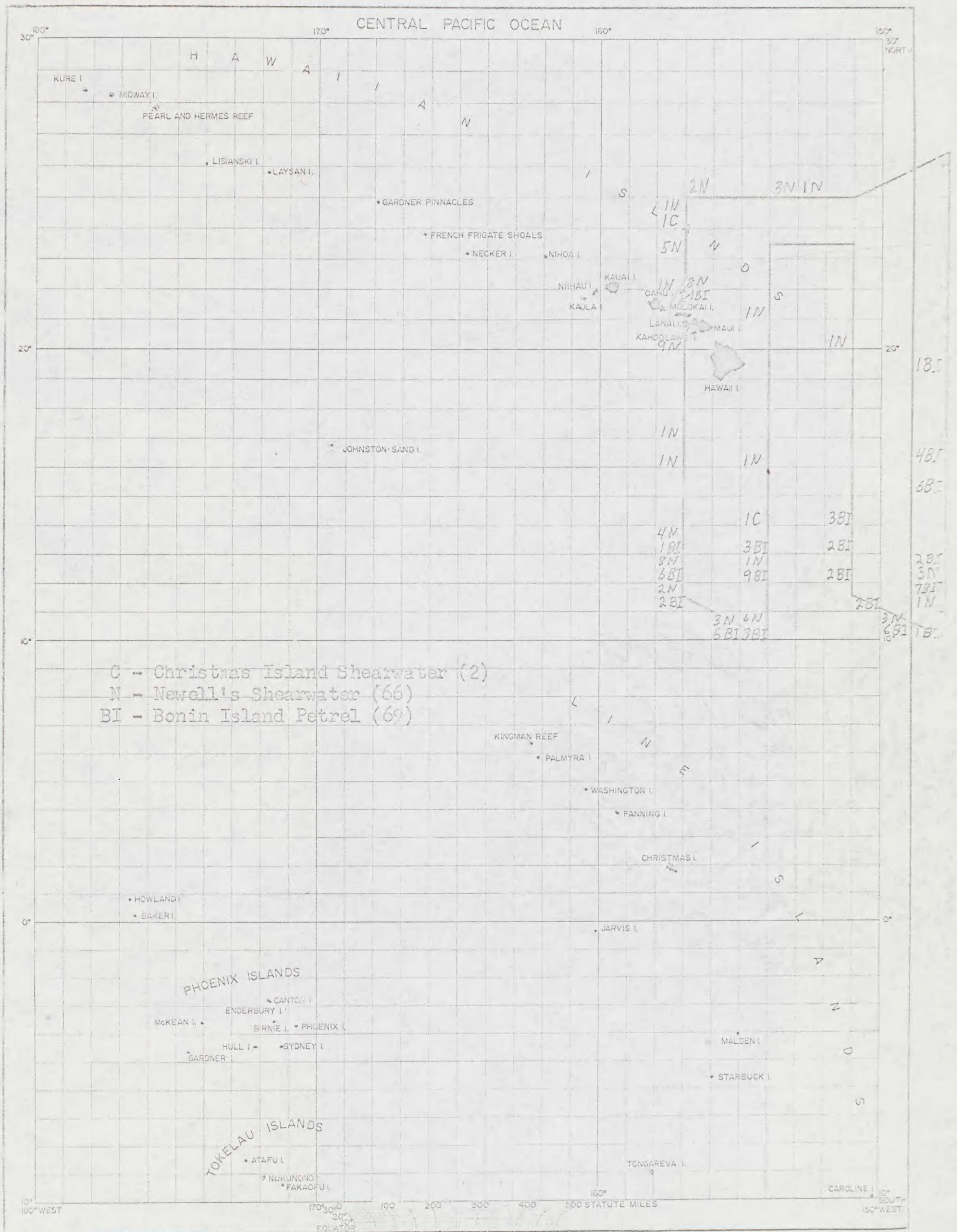
<u>Date</u>	<u>Black-footed Albatross</u>	<u>Wedgetail</u>	<u>Sooty Shearwater</u>	<u>Newell's Shearwater</u>	<u>Dark-Rumped Petrel</u>
May 17	0	229	5	9	1
18	0	123	9	2	0
19	1	58	23	14	1
20	0	235	0	9	3
21	0	2	1	1	1
22	0	10	0	1	0
23	0	61	2	1	0
24	3	3	2	0	1
25	0	0	1	1	0
26	0	6	0	0	1
27	0	44	1	0	24
28	0	97	0	3	37
29	0	126	0	4	56
30	0	6	0	0	2
31	0	9	0	0	0
June 1	1	1	0	0	1
2	2	6	0	0	1
3	3	82	0	4	1
4	7	18	0	8	0
5	3	151	0	9	1
Total	20	1637	44	66	131
Average	1	81.9	2.2	3.3	6.6

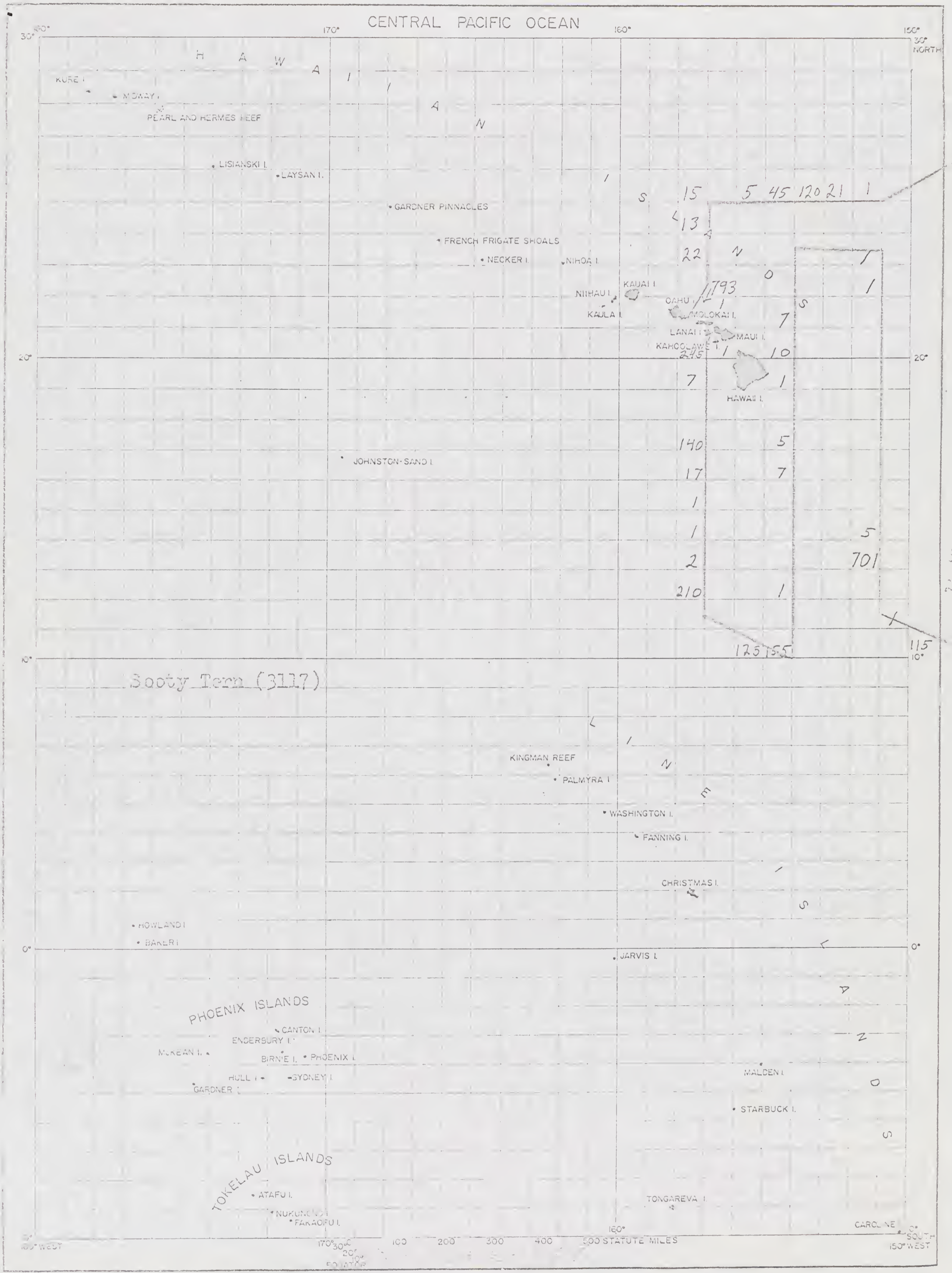
TABLE IV (continued)

PROCELLARIID BREAKDOWN

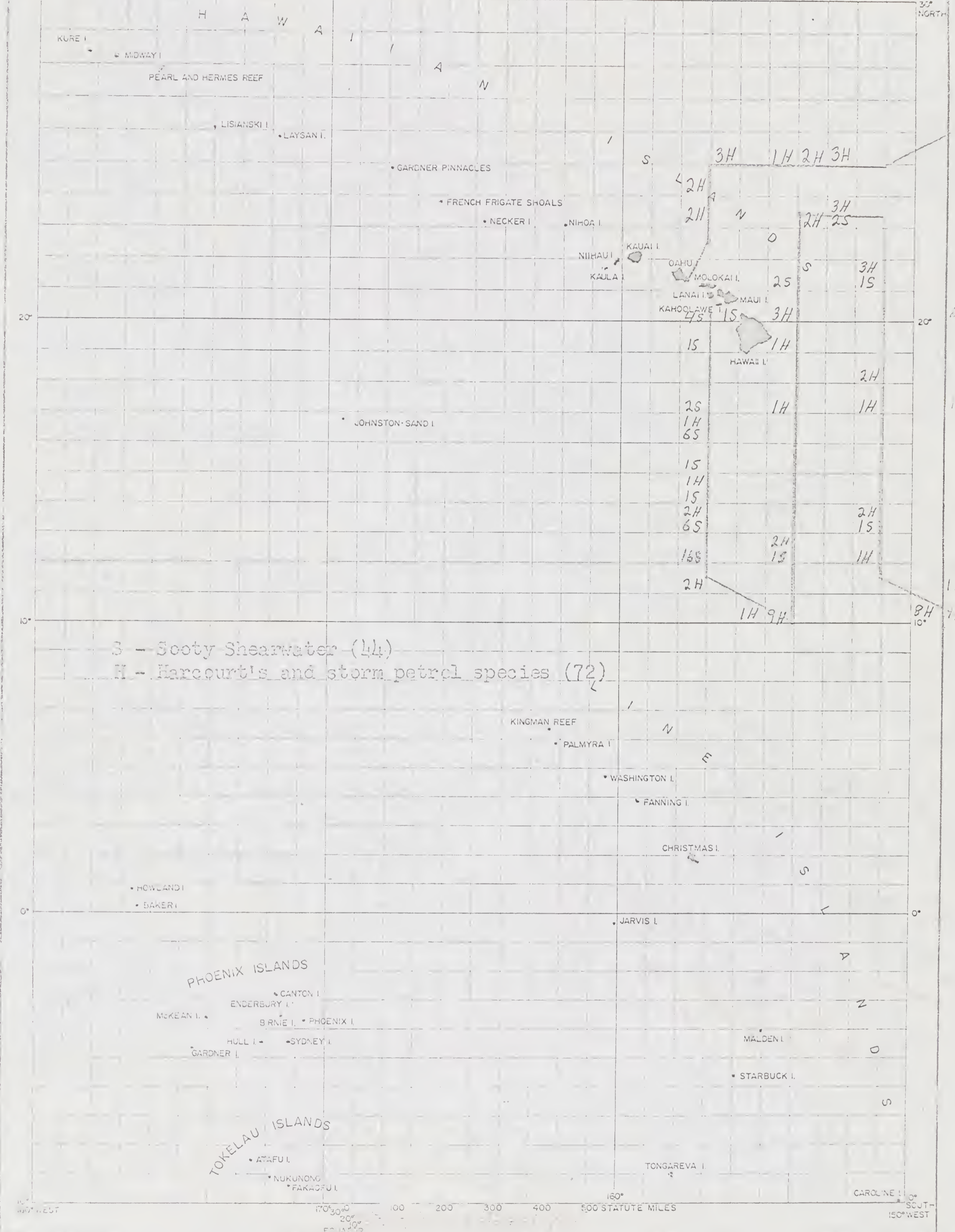
<u>Date</u>	<u>White-necked Petrel</u>	<u>Bonin Island Petrel</u>	<u>Bulwer's Petrel</u>	<u>Storm Petrel</u>	<u>Unidentified Procellariids</u>
May 17	0	0	81	0	4
18	0	0	2	1	23
19	2	10	8	5	60
20	8	9	8	9	11
21	1	12	0	2	5
22	0	0	6	1	3
23	0	0	2	4	3
24	0	0	0	5	0
25	0	0	0	3	0
26	0	0	7	3	2
27	7	7	11	3	16
28	4	9	2	9	21
29	12	9	7	1	105
30	0	10	1	1	10
31	0	1	1	6	2
June 1	0	0	0	1	1
2	0	0	7	5	1
3	0	1	6	6	50
4	0	0	18	7	5
5	0	1	11	0	0
Total					
20	34	69	178	72	322
Average					
	1.7	3.5	8.9	3.6	16.1



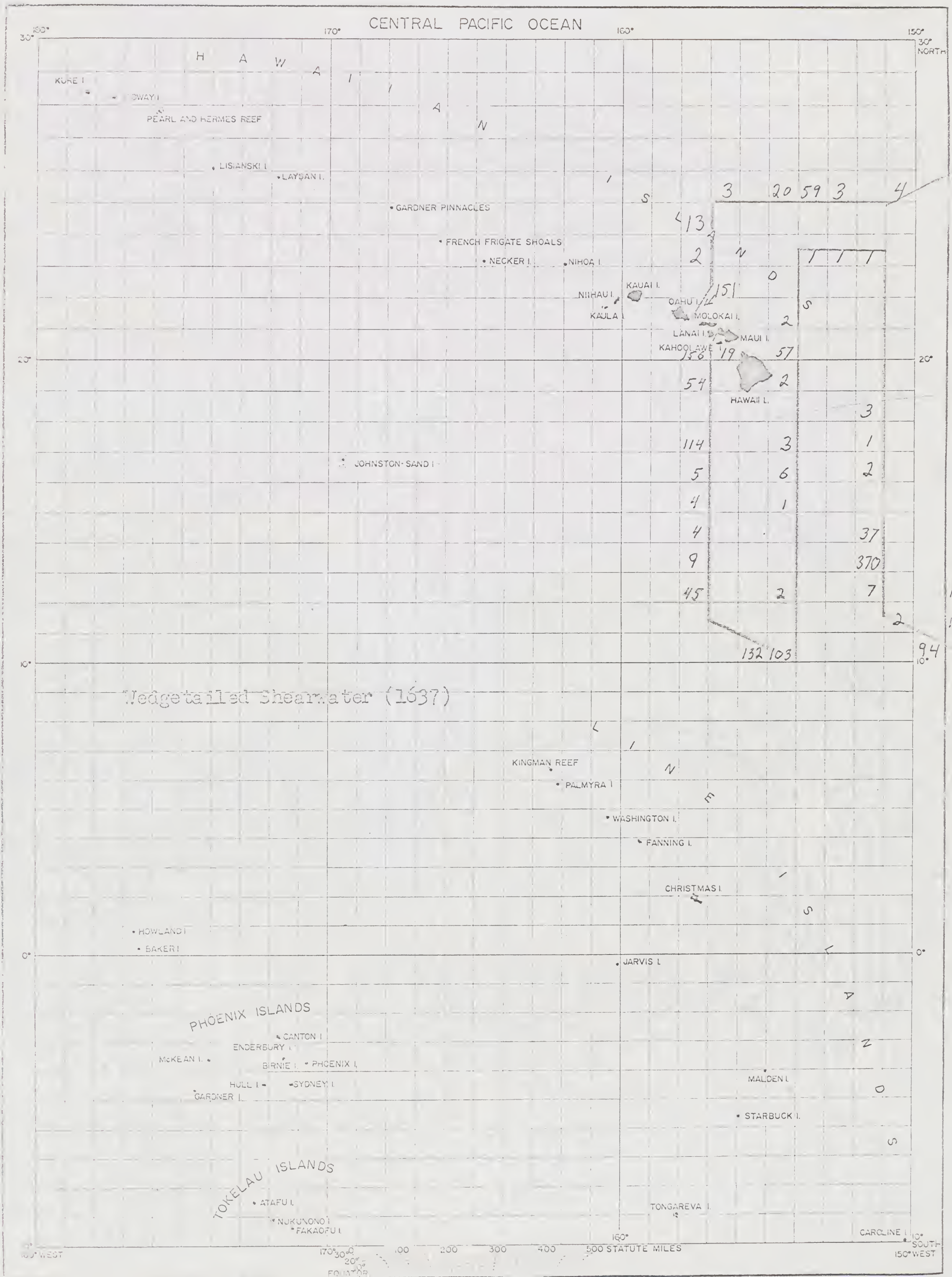


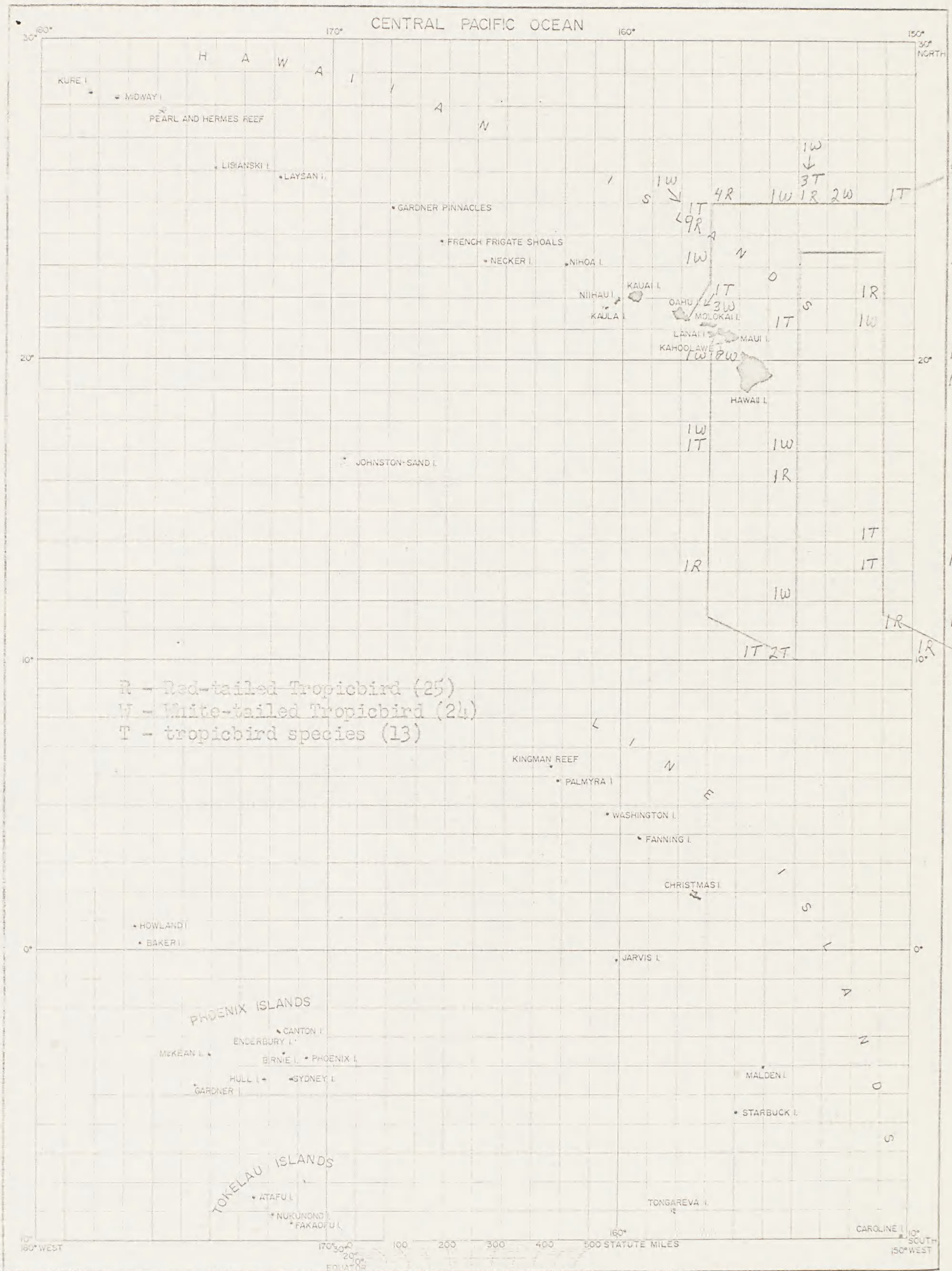


CENTRAL PACIFIC OCEAN

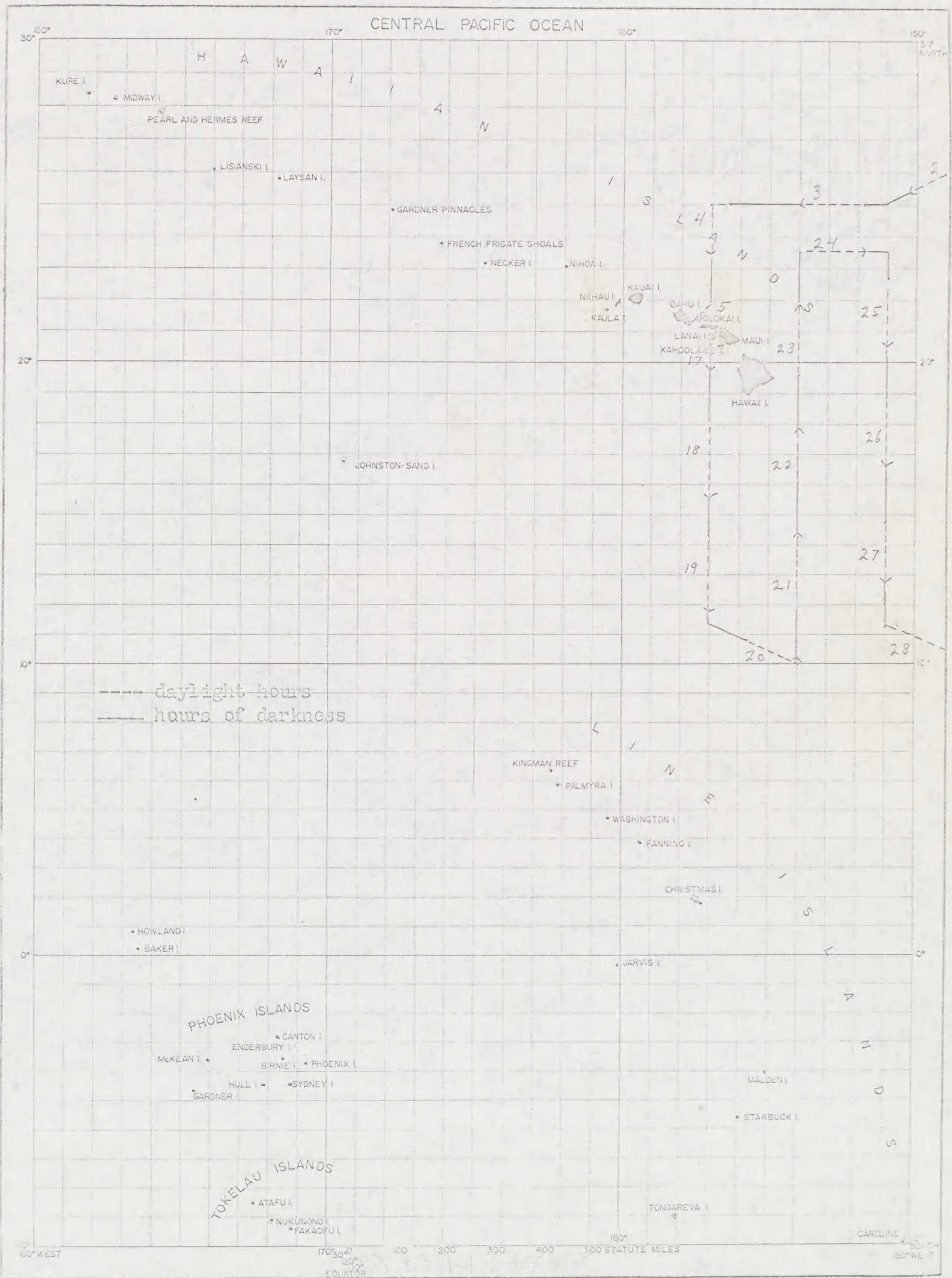


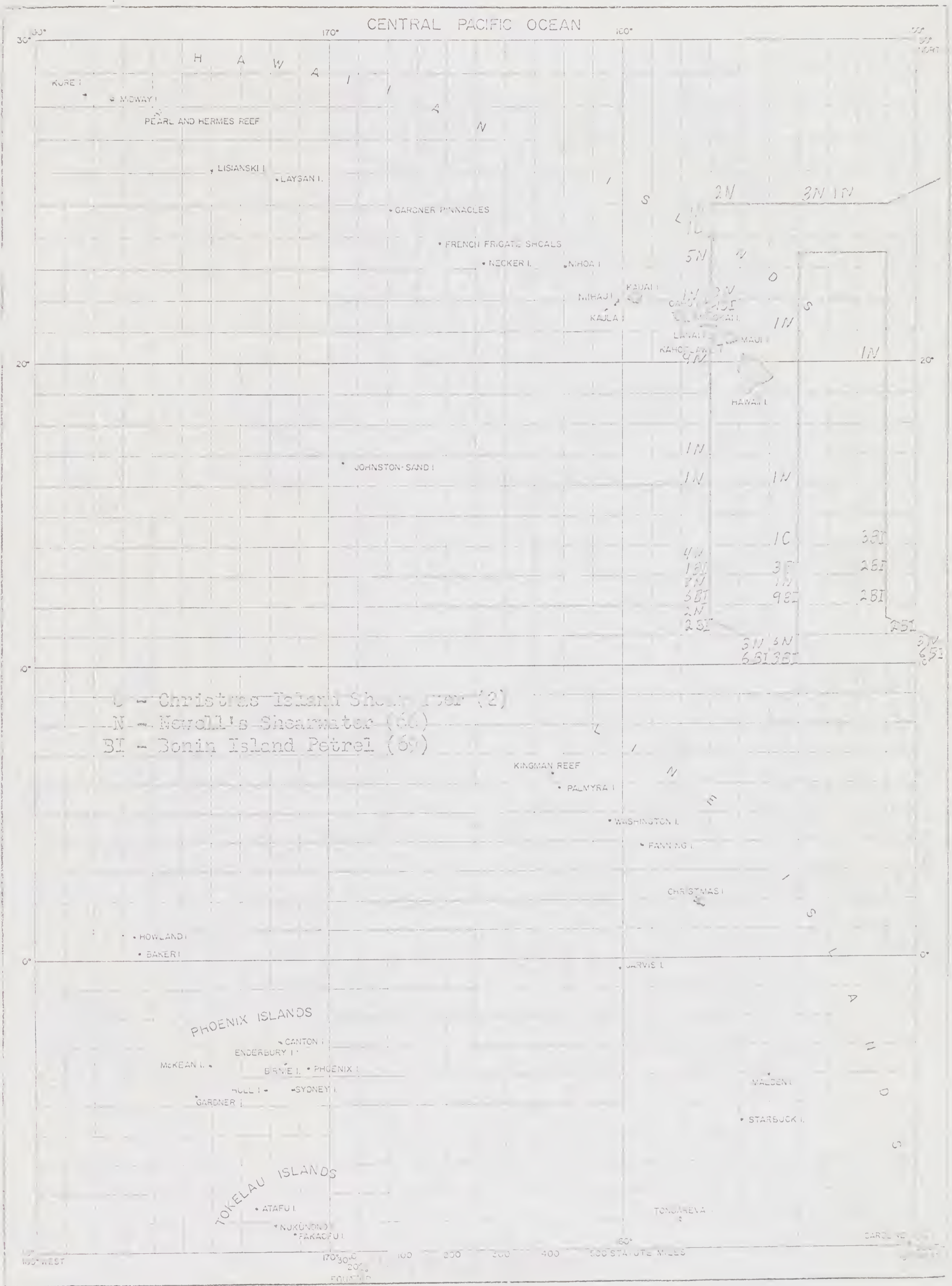
S - Sooty Shearwater (44)
 H - Harcourt's and storm petrel species (72)

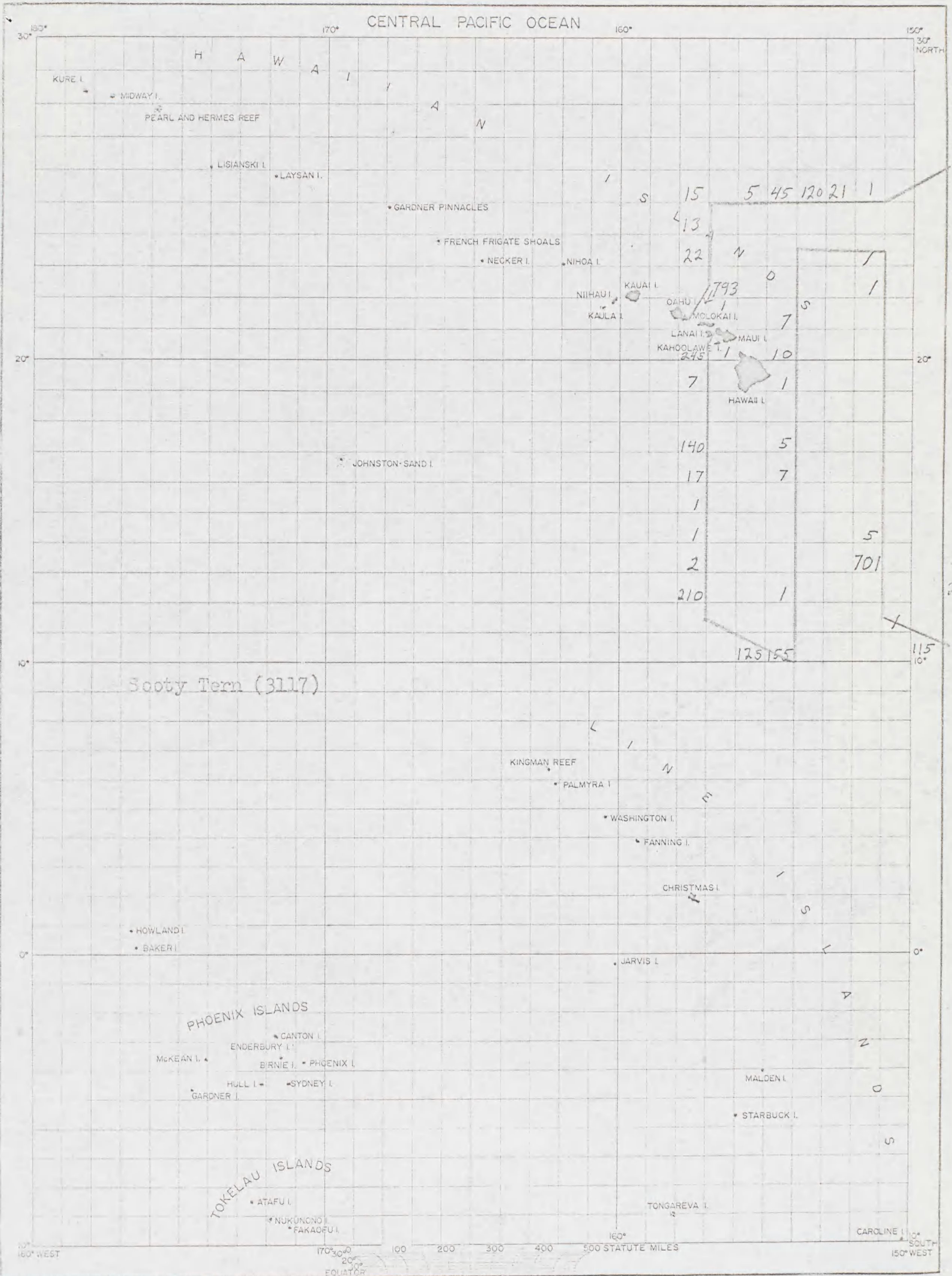


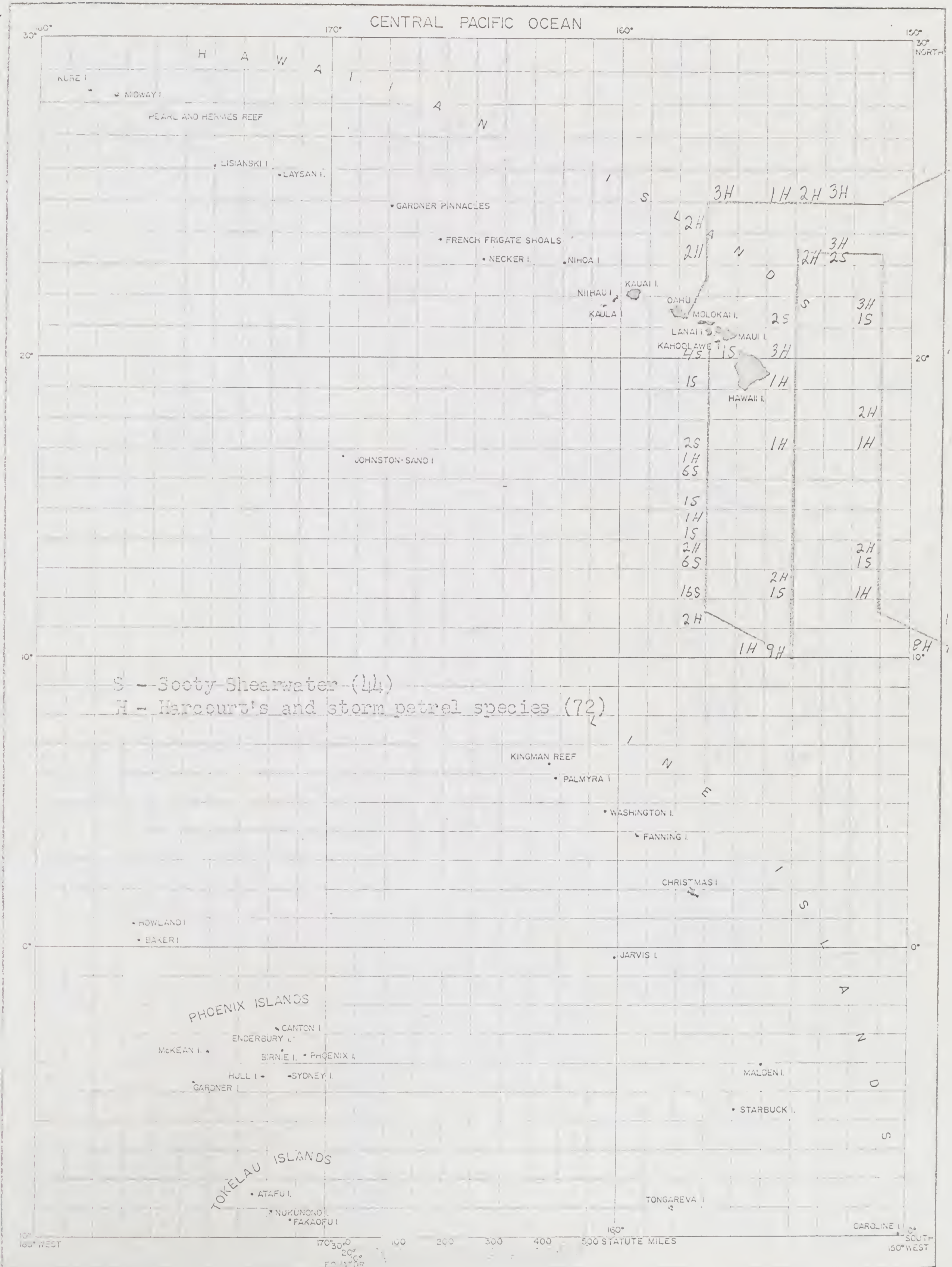


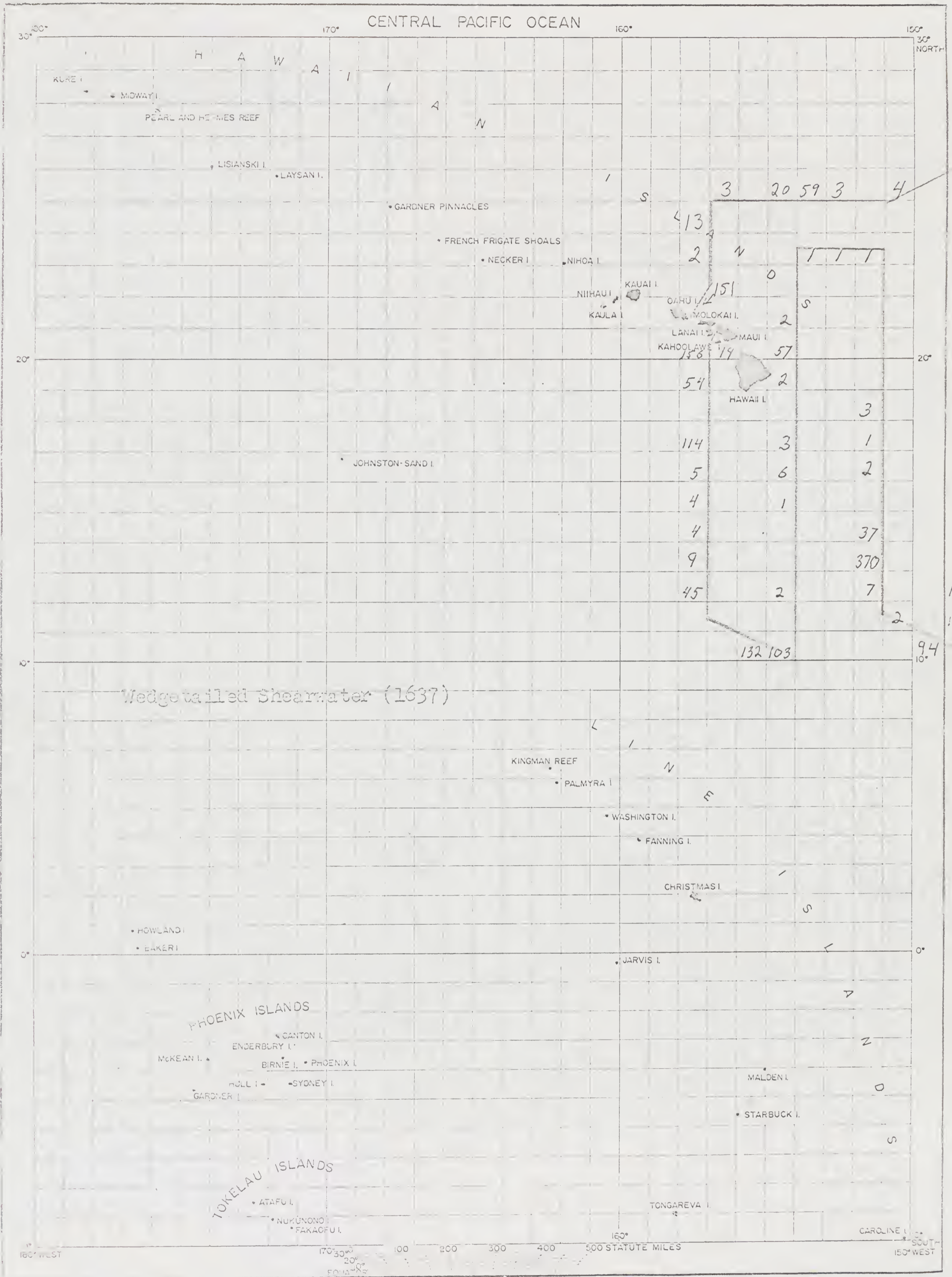
Ely TC#4

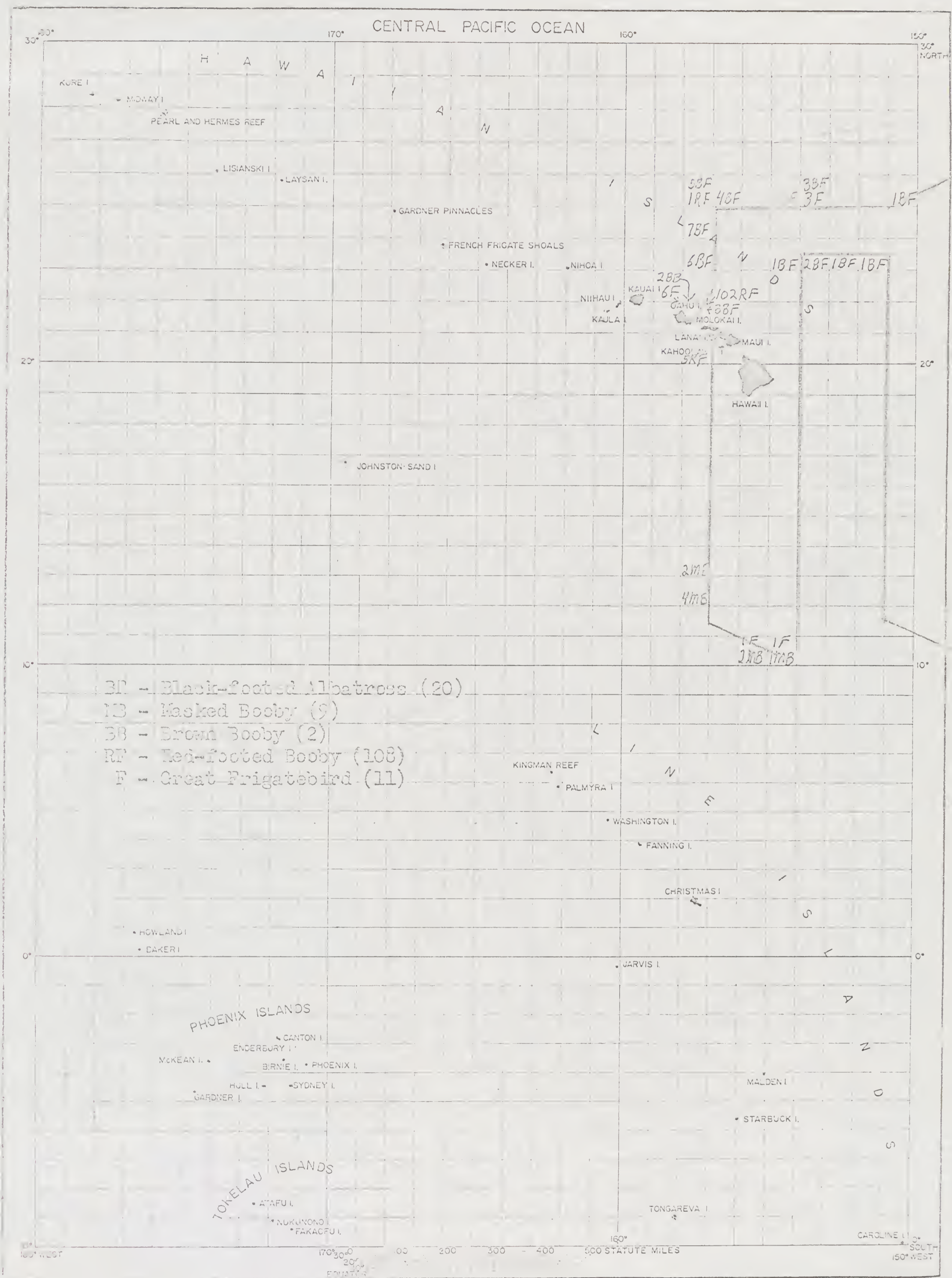












- BF - Black-footed Albatross (20)
- B - Masked Booby (9)
- BB - Brown Booby (2)
- RF - Red-footed Booby (108)
- F - Great Frigatebird (11)

180° WEST 170° 30' 00" 200 300 400 500 STATUTE MILES 160° 150° WEST EQUATOR 30° NORTH 10° SOUTH

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 17 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100																
0200																
0300																
0400																
0500																
0600																
0700																
0800	20 34	156 32														
0900	21 22	156 31														
1000	22 25	156 32														
1100	23 47	156 30														
1200	25 27	156 29														
1300	26 33	156 11														
1400	28 35	156 12														
1500	31 25	157 15														
1600	33 25	157 07														
1700	35 19	7														
1800	37 04	157 02														
1900	39 29	157 33														
2000	41 41	157 00														
2100	43 25	157 00														
2200	45 35	157 00														
2300	47 29	157 00														
2400	49 22	157 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

6
38
27
18
7
9
105

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 18 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	18 00	157 30													
0200	18 00	157 40	00	10	1016.0	24.2	20	79	X		X-X-X	24.6	15	50	S-12
0300	18 00	157 50													
0400	18 00	158 00													
0500	18 00	158 10													
0600	18 00	158 20													
0700	18 00	158 30													
0800	18 01	158 30	01	10	1016.3	24.1	21	82	5		10-6-7	24.3	15	70	S-12
0900	18 00	158 40													
1000	18 00	158 50													
1100	18 00	159 00													
1200	18 00	159 10													
1300	18 00	159 20													
1400	18 00	159 30	03	10	1015.5	25.3	22	81	4		190-6-7	24.8	12	80	S-12
1500	18 00	159 40													
1600	18 10	159 50													
1700	18 00	159 50													
1800	18 00	159 50													
1900	18 00	159 50													
2000	18 00	159 50	03	10	1015.5	25.2	22	82	7		X-X-X	25.4	16	70	S-12
2100	18 00	159 50													
2200	18 00	159 50													
2300	18 00	159 50													
2400	18 00	159 50													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 17 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	14 31	156 57													
0200	14 31	156 57	03	5	1014.5	25.0	22	83	8		60-5-4	25.2	15	60	S-12
0300	14 30	156 59													
0400	14 30	156 59													
0500	14 28	156 59													
0600	14 07	156 59													
0700	13 55	156 59													
0800	13 44	156 59	02	10	1014.9	26.2	23	82	7		60-6-7	25.4	20	60	S-12
0900	13 32	156 59													
1000	13 21	157 01													
1100	13 10	157 03													
1200	13 09	157 03													
1300	12 58	157 03													
1400	12 47	157 02	02	10	1012.4	25.8	23	84	5		60-6-7	26.6	16	70	S-12
1500	12 36	157 02													
1600	12 25	157 02													
1700	12 13	157 02													
1800	12 01	157 02													
1900	11 49	157 02													
2000	11 37	157 02	01	5	1012.1	27.0	23	78	3		70-6-7	27.1	20	70	S-12
2100	11 30	157 01													
2200	11 30	157 01													
2300	11 29	156 59													
2400	11 24	156 49													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 20 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	11 19	156 28														
0200	11 14	156 27	01		10	1011.3	26.9	24	83	1		80-6-7	27.3	16	70	SE-12
0300	11 09	156 17														
0400	11 04	156 07														
0500	10 59	155 57														
0600	10 55	155 47														
0700	10 50	155 37														
0800	10 46	155 27	15		10	1012.9	26.9	24	83	6		90-6-7	27.2	13	90	SE-12
0900	10 41	155 17														
1000	10 37	155 07														
1100	10 32	154 57														
1200	10 28	154 47														
1300	10 21	154 38														
1400	10 15	154 26	02		10	1010.9	27.8	24	79	3		70-6-7	27.2	12	80	SE-12
1500	10 09	154 16														
1600	10 03	154 06														
1700	10 00	154 00														
1800	10 02	154 50														
1900	10 09	154 01														
2000	10 20	154 01	02		10	1011.9	26.7	23	79	2		70-6-7	27.2	22	80	N-12
2100	10 32	154 00														
2200	10 44	154 00														
2300	10 55	154 00														
2400	11 06	154 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION

DIVISION OF BIRDS

AT SEA SURVEY CHART C

DATE 21 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	11 18	153 59														
0200	11 30	153 59	50		5	1012.0	26.3	23	81	8		60-6-7	27.0	20	60	N-12
0300	11 32	153 59														
0400	11 37	153 59														
0500	11 49	153 59														
0600	12 00	153 58														
0700	12 12	153 58														
0800	12 24	153 59	02		10	1014.0	25.8	23	84	1		50-9-9	26.3	25	70	N-12
0900	12 35	153 59														
1000	12 46	153 59														
1100	12 58	154 00														
1200	13 04	154 00														
1300	13 05	154 00														
1400	13 17	154 00	02		10	1013.1	26.1	22	77	2		60-6-7	25.1	24	70	N-12
1500	13 29	154 00														
1600	13 40	154 00														
1700	13 52	154 01														
1800	14 03	154 01														
1900	14 14	154 01														
2000	14 25	154 01	01		10	1015.0	25.3	21	77	1		80-6-7	24.9	24	80	N-12
2100	14 29	154 01														
2200	14 30	154 01														
2300	14 34	154 01														
2400	14 46	154 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 22 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	14 58	154 00													
0200	15 09	154 00	02	25	1014.6	24.4	20	77	1		80-6-7	24.6	27	80	N-12
0300	15 20	154 00													
0400	15 31	154 00													
0500	15 42	154 00													
0600	15 53	153 59													
0700	16 00	153 59													
0800	16 00	153 59	02	10	1015.5	25.1	21	77	4		70-6-7	24.8	20	80	N-12
0900	16 11	153 59													
1000	16 23	153 59													
1100	16 35	153 59													
1200	16 46	153 59													
1300	16 58	153 59													
1400	17 10	153 59	03	10	1015.2	24.8	21	79	7						
1500	17 22	153 59									70-6-7	24.9	20	70	N-12
1600	17 32	154 00													
1700	17 32	154 00													
1800	17 44	154 00													
1900	17 56	154 00													
2000	18 08	154 00	01	10	1016.0	24.4	20	77	7		70-6-7	24.1	22	60	N-12
2100	18 13	154 00													
2200	18 25	154 00													
2300	18 37	154 00													
2400	18 48	154 00													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 23 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	18 59	154 00														
0200	19 10	154 00	50		5	1016.0	22.9	20	83	8		70-6-7	24.2	20	90	N-12
0300	19 10	154 00														
0400	19 20	154 00														
0500	19 31	154 00														
0600	19 42	154 00														
0700	19 53	154 00														
0800	20 04	154 00	01		5	1017.5	23.0	20	83	7		60-8-9	23.4	29	90	N-12
0900	20 16	154 00														
1000	20 27	154 00														
1100	20 38	154 00														
1200	20 49	154 01														
1300	20 49	154 01														
1400	20 58	154 00	25		5	1018.0	24.2	19	73	7		70-8-9	23.3	28	90	N-12
1500	21 10	154 00														
1600	21 21	154 01														
1700	21 32	154 01														
1800	21 44	154 01														
1900	21 56	154 01														
2000	21 59	154 02	01		5	1019.6	23.8	18	75	7		70-8-9	23.2	20	90	N-12
2100	21 59	154 02														
2200	22 09	154 01														
2300	22 19	154 01														
2400	22 30	154 01														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 24 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	22 40	154 00														
0200	22 51	154 00	02		5	1020.0	27.8	19	79	8		70-8-9	23.1	26	80	N-12
0300	23 02	154 00														
0400	23 15	154 00														
0500	23 27	154 00														
0600	23 30	154 00														
0700	23 30	154 00														
0800	23 29	153 47	14		5	1021.5	21.8	18	79	7		80-8-7	23.0	18	80	N-12
0900	23 28	153 34														
1000	23 28	153 22														
1100	23 27	153 12														
1200	23 26	153 02														
1300	23 27	153 52														
1400	23 27	152 43	02		10	1021.1	22.2	17	73	8		70-10-9	22.9	23	90	E-12
1500	23 28	152 33														
1600	23 28	152 23														
1700	23 29	152 14														
1800	23 29	152 04														
1900	23 29	151 54														
2000	23 29	151 45	01		10	1021.8	21.6	17	78	6		70-10-9	22.8	20	70	E-12
2100	23 30	151 35														
2200	23 30	151 26														
2300	23 30	151 16														
2400	23 30	151 07														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 25 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	23 30	151 00													
0200	23 28	151 00	03	5	1022.0	21.4	16	72	8		70-10-9	22.6	16	70	5-12
0300	23 16	150 59													
0400	23 04	150 58													
0500	22 52	150 58													
0600	22 40	150 57													
0700	22 29	150 57													
0800	22 18	150 58	02	10	1020.9	21.9	17	74	7		70-6-5	23.1	12	100	5-12
0900	22 07	150 58													
1000	22 01	150 58													
1100	21 59	150 59													
1200	21 48	150 59													
1300	21 36	151 00													
1400	21 25	151 01	02	5	1020.0	22.3	19	81	7		100-6-7	23.1	14	70	5-12
1500	21 13	151 02													
1600	21 01	151 03													
1700	20 49	151 03													
1800	20 37	151 04													
1900	20 28	151 04													
2000	20 28	151 04	03	10	1019.5	23.1	19	77	8		70-6-7	22.9	18	90	5-12
2100	20 23	151 03													
2200	20 11	151 03													
2300	20 01	151 03													
2400	19 50	151 03													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 26 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	19 38	151 03														
0200	19 26	151 03	02		10	1017.0	23.2	19	77	8		70-6-7	23.4	19	70	3-12
0300	19 14	151 03														
0400	19 02	151 03														
0500	18 55	151 03														
0600	18 53	151 03														
0700	18 44	151 03														
0800	18 32	151 03	14		10	1018.0	23.8	20	79	6		70-6-7	23.5	18	80	3-12
0900	18 21	151 02														
1000	18 09	151 02														
1100	17 58	151 02														
1200	17 45	151 01														
1300	17 34	151 01														
1400	17 30	151 00	02		10	1016.0	24.5	21	80	4		60-6-7	24.2	18	70	3-12
1500	17 27	151 00														
1600	17 14	150 59														
1700	17 01	150 58														
1800	16 48	150 58														
1900	16 37	150 57														
2000	16 24	150 58	01		10	1016.0	24.4	21	81	3		60-6-5	24.2	14	80	5-12
2100	16 19	150 58														
2200	16 07	150 59														
2300	15 59	150 59														
2400	15 58	150 59														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 27 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	15 47	151 00													
0200	15 35	151 00	02	10	1015.0	23.9	21	83	3		60-6-5	24.1	18	70	S-12
0300	15 22	151 00													
0400	15 10	151 01													
0500	14 58	151 02													
0600	14 45	151 01													
0700	14 33	151 01													
0800	14 20	151 01	03	10	1015.5	25.4	21	77	4		50-6-7	25.8	17	50	S-12
0900	14 08	151 00													
1000	14 12	150 59													
1100	13 59	150 59													
1200	13 48	150 58													
1300	13 35	150 58													
1400	13 23	150 58	03	10	1014.0	26.0	22	78	8		50-6-7	26.1	18	50	S-12
1500	13 10	150 59													
1600	12 58	150 59													
1700	12 58	150 59													
1800	12 47	150 59													
1900	12 35	150 59													
2000	12 25	150 59	02	5	1015.0	25.4	20	81	8		50-6-7	26.4	18	50	S-12
2100	12 20	150 54													
2200	12 08	150 59													
2300	11 55	151 00													
2400	11 43	151 00													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 28 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	11 30	151 00														
0200	11 23	151 00	50		5	1014.0	75.7	23	84	8		60-6.7	26.0	19	70	S-12
0300	11 23	150 59														
0400	11 18	150 50														
0500	11 13	150 40														
0600	11 09	150 30														
0700	11 05	150 21														
0800	11 00	150 10	01		10	1014.0	76.2	22	83	6		70-6.5	26.1	12	90	SE-12
0900	10 55	149 58														
1000	10 51	149 48														
1100	10 48	149 32														
1200	10 45	149 28														
1300	10 40	149 19														
1400	10 35	149 10	02		10	1017.7	26.9	24	83	8		60-6.7	26.4	16	100	SE-12
1500	10 30	149 00														
1600	10 26	148 51														
1700	10 21	148 41														
1800	10 17	148 33														
1900	10 12	148 23														
2000	10 07	148 13	03		10	1013.7	26.1	24	81	8		100-6.7	26.6	17	110	SE-12
2100	10 04	148 08														
2200	10 04	148 08														
2300	10 12	148 08														
2400	10 24	148 08														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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SMITHSONIAN INSTITUTION

DIVISION OF BIRDS

AT SEA SURVEY CHART C

DATE

29 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	10 35	148 08														
0200	10 47	148 08	02		10	10132	26.2	24	87	6		110-5-5	26.6	09	110	N-12
0300	10 52	148 08														
0400	11 10	148 08														
0500	11 21	148 08														
0600	11 32	148 08														
0700	11 38	148 08														
0800	11 41	148 08	02		5	1014.9	25.8	23	84	8		50-6-7	26.2	17	110	N-12
0900	11 54	148 08														
1000	12 06	148 08														
1100	12 16	148 08														
1200	12 26	148 08														
1300	12 37	148 07														
1400	12 49	148 07	02		10	1014.7	26.9	24	83	6		50-6-7	25.8	18	60	N-12
1500	13 00	148 06														
1600	13 00	148 06														
1700	13 08	148 05														
1800	13 18	148 05														
1900	13 30	148 05														
2000	13 42	148 04	25		10	1015.8	25.6	22	80	8		60-7-9	25.7	17	60	N-12
2100	13 49	148 03														
2200	13 54	148 02														
2300	14 11	148 01														
2400	14 23	148 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 30 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	14 30	147 58													
0200	14 31	147 58	01	5	1015.0	25.0	22	83	7		60-7-9	23.5	16	60	N-12
0300	14 44	147 57													
0400	14 56	147 55													
0500	15 08	147 54													
0600	15 20	147 54													
0700	15 32	147 53													
0800	15 46	147 55	02	5	1016.0	25.0	21	78	7		70-6-7	24.8	20	90	N-12
0900	15 58	147 56													
1000	16 01	147 56													
1100	16 05	147 57													
1200	16 17	147 57													
1300	16 30	147 58													
1400	16 42	147 59	02	5	1016.0	24.5	21	80	6		70-6-4	24.5	16	70	N-12
1500	16 54	148 00													
1600	17 06	148 00													
1700	17 19	148 02													
1800	17 31	148 04													
1900	17 33	148 04													
2000	17 41	148 03	01	10	1017.0	24.0	21	83	6		70-6-4	24.1	19	80	N-12
2100	17 47	148 02													
2200	17 59	148 01													
2300	18 11	148 00													
2400	18 23	148 00													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 31 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	18 25	147 59														
0200	18 47	147 58	01		10	1017.0	23.6	20	80	5		70-6-4	23.8	14	70	N-12
0300	18 59	147 57														
0400	18 59	147 57														
0500	19 07	147 57														
0600	19 19	147 56														
0700	19 30	147 56														
0800	19 41	147 57	02		10	1019.2	23.4	20	81	2		80-6-5	23.8	18	60	N-12
0900	19 52	147 57														
1000	20 00	147 57														
1100	20 14	147 58														
1200	20 28	147 59														
1300	20 30	147 59														
1400	20 30	147 59	02		25	1019.2	23.8	19	75	3		80-6-4	23.8	15	70	N-12
1500	20 30	147 59														
1600	20 30	147 59														
1700	20 30	147 59														
1800	20 30	147 59														
1900	20 30	147 57														
2000	20 43	147 56	02		25	1020.0	23.7	20	79	2		60-6-7	23.7	16	60	N-12
2100	20 48	147 56														
2200	21 00	147 57														
2300	21 12	147 57														
2400	21 25	147 57														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 1 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	21 37	147 57														
0200	21 49	147 58	02		25	1020.7	23.1	18	73	2		80-6-7	23.1	16	80	N-12
0300	22 02	147 58														
0400	22 03	147 58														
0500	22 07	147 58														
0600	22 20	147 58														
0700	22 32	147 58														
0800	22 45	147 58	02		25	1022.4	23.0	17	70	2		90-6-4	23.0	15	90	N-12
0900	22 58	147 58														
1000	23 11	147 59														
1100	23 24	147 59														
1200	23 32	147 59														
1300	23 34	147 59														
1400	23 46	147 59	02		25	1022.1	23.7	19	75	2		150-6-4	23.7	12	100	N-12
1500	23 58	147 59														
1600	24 09	148 00														
1700	24 21	148 00														
1800	24 33	148 00														
1900	24 45	148 00														
2000	24 54	147 59	02		25	1012.0	23.3	19	77	2		120-5-2	23.3	12	120	N-12
2100	25 00	147 59														
2200	25 00	147 59														
2300	25 09	147 58														
2400	25 21	147 57														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 2 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	25 22	147 56														
0200	25 44	147 55	02		25	1022.0	22.0	21	94	1		100-5-2	22.3	8	100	N-12
0300	25 56	147 54														
0400	26 08	147 53														
0500	26 20	147 53														
0600	26 29	148 00														
0700	26 29	148 00														
0800	26 25	148 26	01		10	1021.0	22.4	17	92	7		140-5-2	22.3	13	190	SW-12
0900	26 20	148 18														
1000	26 15	148 30														
1100	26 12	148 42														
1200	26 05	148 54														
1300	25 59	149 05														
1400	25 53	149 17	03		10	1019.0	23.2	18	73	6		210-5-4	22.5	13	270	SW-12
1500	25 46	149 28														
1600	25 40	149 40														
1700	25 34	149 51														
1800	25 28	150 03														
1900	25 22	150 14														
2000	25 16	150 25	01		25	1018.0	22.7	19	79	1		250-5-4	23.4	11	250	SW-12
2100	25 14	150 30														
2200	25 07	150 41														
2300	25 01	150 52														
2400	25 00	151 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

25
2
56

100

100

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3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 3 June 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	25 00	151 00													
0200	25 00	151 11	03	10	1017.0	23.2	21	87-	5		240-5-3	23.3	12	240	W-12
0300	24 59	151 23													
0400	24 59	151 35													
0500	24 59	151 47													
0600	24 58	151 59													
0700	24 58	152 12													
0800	24 58	152 25	14	10	1017.5	23.4	20	81	7		250-5-7	23.1	10	240	W-12
0900	24 58	152 38													
1000	24 57	152 50													
1100	24 57	153 02													
1200	24 57	153 14													
1300	24 56	153 26													
1400	24 56	153 39	03	10	1017.8	23.6	20	80	4		290-5-5	24.1	12	340	W-12
1500	24 56	153 51													
1600	24 56	153 57													
1700	24 56	153 59													
1800	24 57	154 12													
1900	24 58	154 25													
2000	24 57	154 37	01	25	1017.0	23.7	17	70	3		300-5-5	24.1	18	300	W-12
2100	24 58	154 42													
2200	24 58	154 54													
2300	24 58	155 06													
2400	24 58	155 18													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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SMITHSONIAN INSTITUTION

DIVISION OF BIRDS

AT SEA SURVEY CHART C

DATE

4 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	24 58	155 28														
0200	24 59	155 37	01		25	1017.3	24.2	17	73	2		290-5-5	23.9	5	320	W-12
0300	25 00	155 51														
0400	25 00	156 02														
0500	25 00	156 15														
0600	25 00	156 28														
0700	25 00	156 38														
0800	25 00	156 50	02		25	1018.1	23.2	17	72	1		320-5-2	23.9	4	310	W-12
0900	25 00	157 01														
1000	25 00	157 01														
1100	24 53	157 00														
1200	24 42	157 00														
1300	24 32	157 00														
1400	24 22	156 50	03		10	1017.8	24.7	18	65	7		270-5-2	24.8	5	270	S-12
1500	24 11	156 59														
1600	24 00	156 59														
1700	23 59	156 59														
1800	23 58	156 59														
1900	23 50	156 59														
2000	23 30	156 59	02		10	1018.0	24.1	18	69	6		200-5-2	25.2	5	200	S-12
2100	23 26	156 58														
2200	23 12	156 57														
2300	22 57	156 56														
2400	22 49	157 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

SI-MNH-955c
3-4-64

SMITHSONIAN INSTITUTION
DIVISION OF BIRDS
AT SEA SURVEY CHART C

DATE 5 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	22 28	157 57														
0200	22 38	157 57														
0300	22 48	157 00														
0400	22 58	157 01														
0500	22 08	157 02														
0600	22 00	157 02														
0700	21 52	157 10														
0800	21 43	157 20														
0900	21 33	157 30														
1000	21 23	157 38														
1100	21 14	157 47														
1200	21 04	157 48														
1300	21 18	157 52														
1400																
1500																
1600																
1700																
1800																
1900																
2000																
2100																
2200																
2300																
2400																

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS